The Communicator

March/April 2020

SARC

What Are They?

Propagation boosters!

Article on page 14

A Publication Of Surrey Amateur Radio Communications

PUBLICATION CONTACTS

COMMUNICATOR & BLOG EDITOR	John Schouten VE7TI communicator at ve7sar.net
SARC TELEPHONE	(778) 683-4662
CORRESPONDENCE	12144 - 57A Avenue Surrey, BC V3X 2S3 SARC at ve7sar.net
CONTRIBUTING EDITORS	John Brodie VA7XB Kevin McQuiggin VE7ZD/KN7Q

The Communicator is a publication of Surrey Amateur Radio Communications.

It appears bi-monthly, on odd-numbered months, for area Amateur Radio operators and beyond, to enhance the exchange of information and to promote ham radio activity.

During non-publication months we encourage you to visit the Digital Communicator at **ve7sar.blogspot.ca**, which includes recent news, past issues of The Communicator, our history, photos, videos and other information.

To subscribe, unsubscribe or change your address for e-mail delivery of this newsletter, notify **communicator @ ve7sar.net**

Regular readers who are not SARC members are invited to contribute a $5 annual donation towards our Field Day fund via PayPal.

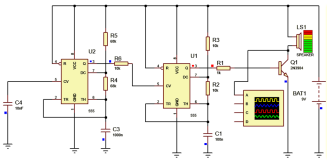
SARC maintains a website at **www.ve7sar.net**

DEPARTMENTS

The Rest Of The Story	**4**
Radio Ramblings	**6**
News You Can Lose—Ham Humour	**13**
Collecting Micro-meteorites	**14**
Tech Topics I	**19**
Tech Topics II	**22**
Tech Topics III	**24**
Tech Topics IV	**27**
Tech Topics V	**31**
Solder Smoke	**32**
Back To Basics	**44**
SARC & SEPAR News	**50-69**
QRT	**71**

IN THIS ISSUE

Curiosity—*Kevin VE7ZD on staying interested*



Solder Splatter and Tech Topics x6!
Daniel VE7LCG with another set of fabulous projects and a CAD Schematics tutorial

OK, What Is It?
A Propagation Booster

QRM -- -.- .-. --

...from the Editor's Shack

Do you have a photo or bit of SARC news to share? An Interesting link?

Something to sell or something you are looking for?
eMail it to communicator at ve7sar.net for inclusion in this publication.

Well, I'll be glad to see the end of the rainy season here on the West Coast. I've been catching up on inside projects but I'd rather be outside doing some work on my antennas.

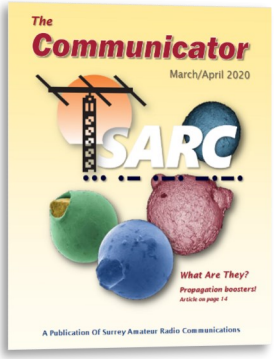
As I write this, we're in the final week of our CW course. All of our 20+ starting students are still with us. Congratulations to Kevin VE7ZD for keeping everyone motivated. I think many are devoting time to practice, as required. Kevin has received ISED endorsement to join John XB and myself as our 3rd designated examiner and he will be putting that to good use for the CW qualifications starting next week. We will follow this up with some practical demos to get graduates on the air.

The Spring 2020 Basic Course also started this week. We're up above 20 students again and it is gratifying to know that our efforts to market Amateur Radio in Surrey are paying off. Many of the students indicate an interest in emergency preparedness and hopefully will devote some volunteer hours to SEPAR on completion of their licence.

The last two SARC and SEPAR general meetings were very well attended, and both had interesting topics and presenters. If you have not been in a while, please come out. Even if the subject is not high on your priority list, we'd like to see you and think that you will go home with new knowledge.

The Amateur Radio Emergency Data Network (AREDN) intrigues me and several other members. A mesh network daisy chains Wi-Fi hotspots to provide connectivity even if the Internet is out at a particular location. It's a great asset for emergency preparedness, as services can send email using their familiar programs, using radio as the transmission means. I see there are some Canadian nodes on the network map and it is popular with Hams south of the border. We're looking to present a meeting program, and hopefully an article, on this shortly.

~ John VE7TI
Communicator Editor



This Month's Issue...

We have received kudos from several locations around the world, and we continue to see new readership from surprising locations... like 160+ downloads last issue from Indonesia last edition!

In addition to Surrey news, we have great projects from DanielVE7LCG, articles from Kevin VE7ZD, John VA7XB, Gord VA7GK, John VE7TI plus our monthly columnists. Enjoy, and please send us feedback, good or bad.

"Never let your ego get in the way of a good idea." - *Stanley Kubrick*

On the Web

ve7sar.net

Between newsletters, watch your e-mail for news, announcements of Amateur Radio events, monthly meetings and training opportunities.

Click the links below to follow our presence on the web and social media:

SARC Blog
ve7sar.blogspot.ca

Twitter
@ve7sar

FaceBook
SurreyAmateurRadio

Our YouTube Channel
SurreyARC

SARC Photo Albums
Web Albums
or
tinyurl.com/SARCphoto

The Rest Of The Story…

William Gilbert

William Gilbert; 24 May 1544 – 30 November 1603), also known as Gilberd, was an English physician, physicist and natural philosopher. He passionately rejected both the prevailing Aristotelian philosophy and the Scholastic method of university teaching. He is remembered today largely for his book De Magnete (1600), and is credited as one of the originators of the term "electricity". He is regarded by some as the father of electrical engineering or electricity and magnetism.

Gilbert was born in Colchester to Jerome Gilberd, a borough recorder. He was educated at St John's College, Cambridge. After gaining his MD from Cambridge in 1569, and a short spell as bursar of St John's College, he left to practice medicine in London and travelled on the continent. In 1573, he was elected a Fellow of the Royal College of Physicians. In 1600 he was elected President of the College. He was Elizabeth I's own physician from 1601 until her death in 1603. James I and VI renewed his appointment.

His primary scientific work—much inspired by earlier works of Robert Norman was De Magnete, Magneticisque Corporibus, et de Magno Magnete Tellure (On the Magnet and Magnetic Bodies, and on the Great Magnet the Earth) published in 1600. In this work, he describes many of his experiments with his model Earth called the terrella. From these experiments, he concluded that the Earth was itself magnetic and that this was the reason compasses point north (previously, some believed that it was the pole star (Polaris) or a large magnetic island on the north pole that attracted the compass). He was the first to argue, correctly, that the centre of the Earth was iron, and he considered an important and related property of magnets was that they can be cut, each forming a new magnet with north and south poles.

The English word "electricity" was first used in 1646 by Sir Thomas Browne, derived from Gilbert's 1600 New Latin electricus, meaning "like amber". The term had been in use since the 13th century, but Gilbert was the first to use it to mean "like amber in its attractive properties". He recognized that friction with these objects removed a so-called "effluvium", which would cause the attraction effect in returning to the object, though he did not realize that this substance (electric charge) was universal to all materials.

The electric effluvia differ much from air, and as air is the earth's effluvium, so electric bodies have their own distinctive effluvia; and each peculiar effluvium has its own individual power of leading to

A unit of magnetomotive force, also known as magnetic potential, was named the Gilbert in his honour.

union, its own movement to its origin, to its fount, and to the body emitting the effluvium.

— Gilbert 1893

In his book, he also studied static electricity using amber; amber is called elektron in Greek, so Gilbert decided to call its effect the electric force. He invented the first electrical measuring instrument, the electroscope, in the form of a pivoted needle he called the versorium.

Like others of his day, he believed that crystal (quartz) was an especially hard form of water, formed from compressed ice:

Lucid gems are made of water; just as Crystal, which has been concreted from clear water, not always by a very great cold, as some used to judge, and by very hard frost, but sometimes by a less severe one, the nature of the soil fashioning it, the humour or juices being shut up in definite cavities, in the way in which spars are produced in mines.

— De Magnete, English translation by Silvanus Phillips Thompson, 1900

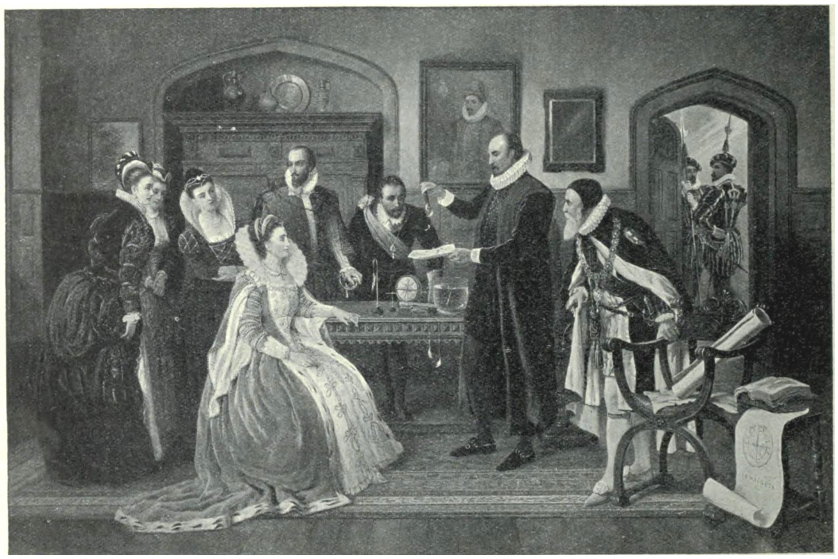
Gilbert argued that electricity and magnetism were not the same thing. For evidence, he (incorrectly) pointed out that, while electrical attraction disappeared with heat, magnetic attraction did not (although it is proven that magnetism does in fact become damaged and weakened with heat). Hans Christian Ørsted and James Clerk Maxwell showed that both effects were aspects of a single force: electromagnetism. Maxwell surmised this in his A Treatise on Electricity and Magnetism after much analysis.

Gilbert's magnetism was the invisible force that many other natural philosophers seized upon, incorrectly, as governing the motions that they observed. While not attributing magnetism to attraction among the stars, Gilbert pointed out the motion of the skies was due to Earth's rotation, and not the rotation of the spheres, 20 years before Galileo (but 57 years after Copernicus who stated it openly in his work De revolutionibus orbium coelestium published in 1543). Gilbert made the first attempt to map the surface markings on the Moon in the 1590s. His chart, made without the use of a telescope, showed outlines of dark and light patches on the Moon's face. Contrary to most of his contemporaries, Gilbert believed that the light spots on the Moon were water, and the dark spots land.

Gilbert died on 30 November 1603 in London. His cause of death is thought to have been the bubonic plague.

Gilbert was buried in his home town, in Holy Trinity Church, Colchester. His marble wall monument can still be seen in this Saxon church, now deconsecrated and used as a café and market.

And that is the rest of his story.



William Gilbert M.D. demonstrating his experiments before queen Elizabeth (painting by A. Auckland Hunt).

Radio Ramblings

Kevin McQuiggin VE7ZD/KN7Q

This month I'd like to look at some creative aspects of amateur radio, and the role of curiosity in both our day to day on-air activities, and in how we adapt to new technology when it is introduced to our hobby.

Curiosity is a basic human characteristic. It is responsible for how we learn about the world at a very young age, and in how we interact with the world as we grow older. We are curious, and this causes us to seek out and absorb new information. Learning our first language, learning to stand and walk, learning how to interact with others: these are all fundamental life skills. Later in our lives we use curiosity to learn a skill, a musical instrument or a sport, complete our education, and start on the path of adult life.

At a certain point we become functional in society, and curiosity may take a lesser role as we go about our adult lives. This is natural, too, but we all know or are aware of people whose sense of curiosity does not diminish, but in fact grows into adulthood. Many of these people become technological, social, or scientific leaders, and they cut the path to the future for the rest of us.

It is their continuing sense of "burning curiosity" that leads these people to invent, innovate, or otherwise "think outside the box" as adults and even into old age, and to deliver amazing new scientific discoveries or technologies to the world.

We may not all be brilliant scientists or thinkers, but an ongoing awareness of our own internal sense of curiosity can help us learn and grow throughout our adult lives.

Perseverance

Closely coupled with curiosity in our juvenile lives is our sense of perseverance. As children, we have an innate understanding that if we fail at something in our initial attempts, that we should keep trying until we master the sought skill. We know we can do it, whatever the task! Take the physical act of an infant learning to stand up as an example – as the saying goes, we "try, try again" and before we know it (sometimes after hundreds of attempts) we are standing and walking, much to the pride (or annoyance) of our parents! Check those safety gates!

Children and young people couple their sense of perseverance with their innate curiosity and persist at new tasks until they succeed. This is how they meet the challenge of mastering the basic skills of life.

Into adulthood, however, many of us also allow our perseverance to recede alongside our sense of curiosity. We may become less motivated to learn new things, and have less patience to work through the steps needed to learn a new subject or new skill. This is something we need to try to avoid.

Adult Learning and Amateur Radio

If we can retain our curiosity and our sense of perseverance, we will find that as adult learners or hobbyists that we are quite adaptable: we will be much more flexible and open to change and learning than those unfortunate other adults who have lost (or are ignoring) these early psychological skills.

Adult learners (or, for example, amateur radio operators who decide to experiment with a new technology, new mode, or new type of antenna) who act on their curiosity and understand that to succeed one must persevere (i.e. learn!) make great progress, sometimes to the chagrin of those others in whom these skills have been lost.

Just about all of us became involved in amateur radio due to our sense of curiosity and desire to understand radio technology, or our desire to help others. We also persevered in order to learn the material necessary to qualify for our licenses. So, the majority of us, as hams, are people in whom this introspective awareness has not been lost.

The key to lifelong learning is to keep your sense of curiosity, and your belief in yourself (i.e. your sense of perseverance) alive!

The ancient Greek philosopher Aristotle (see Figure 1) was aware of this when he wrote "the purpose of life is to flourish and achieve", an admittedly dramatic way of saying that we all need to nurture our sense of curiosity and continue learning into adult life [1]. Aristotle also believed that every person's noblest goal should be to protect others and contribute to a fair and just society. Amateur radio certainly fits in with Aristotle's perspective, even though he lived in the 4th century BC.

Curiosity in Amateur Radio

Many new radio and telecommunication technologies had their start in amateur radio. Looking back over the ~120 years of our hobby, there are a number of creative innovators who stand out: amateurs who acted on their insatiable curiosity to persevere and discover or invent amazing technologies or techniques that we all now take for granted [3]. In some cases, these amateurs faced massive opposition and even ridicule from other hobbyists, from national associations, and even from governments. They persevered, however, and their technologies and techniques are indispensable today.

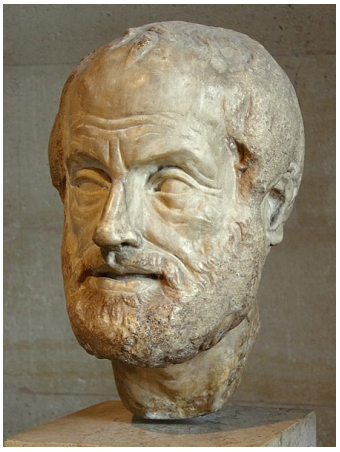


Figure 1 – Aristotle [2]

This innovative characteristic of our hobby continues to this day, for example, with the recent developments in SDRs (software defined radios), new types of antennas, and amazing weak signal modes [4]. Most amateurs are supportive and eager to adopt these new approaches; however, some are not and will work hard to undermine the new technologies even when there is no factual basis for doing so. Why could this be?

What Value is This to Us?

Most of us don't have the creativity of an Edwin Armstrong or John Reinartz, so while we can harness our curiosity to continue to learn and develop as we progress through life, we probably won't invent faster-than-light communication, a Star Trek transporter unit, or an anti-gravity device for holding our antennas up.

What we can do, however, is to foster our sense of curiosity about new technologies, or modes, or operating techniques, and couple that with our innate perseverance to ensure that we continue to develop our knowledge and skills, regardless of our age or other circumstances.

Many senior hams (either chronologically aged, or just those long-licensed) seem to have lost that belief in themselves and their ability to adapt, learn, and to persevere through a learning curve in order to succeed at a new skill. They may either simply lack curiosity, or may alternatively be curious and eager to learn but have lost the resiliency offered by their internal sense of perseverance. This affects their ability to learn.

The former group are complacent and have (unfortunately) given up before they have even tried something new; the latter group have the desire to learn but need to rekindle their internal ability to "try, try again".

Common excuses, especially among the first group, include "I'm too old", "it's too complicated", "I don't have time", "I don't understand math" and other like statements.

What these folks need to realize is that they can learn to do just about anything if they put their mind to it. We all started out curious and persistent. We all learned to walk, to speak, and met other fundamental challenges in our early lives. Nothing has changed except our attitude and our awareness of these innate skills, which persist in all of us.

Learning is simply a process that takes place in a stepwise manner. As the Chinese philosopher Laozi put it in the 6th century BCE, "A journey of a thousand miles begins with a single step". [5]

For example, learning digital signal processing or software-defined radio techniques is widely viewed by many amateur radio hobbyists as complicated and needing a lot of advanced mathematics. DSP is a complicated field for certain, but the fact is that just about anyone can learn the foundational concepts and the associated math with a little bit of reading and contemplation. You just need to persevere and work through the complicated bits.

If you want to teach a course or discover new DSP techniques, then certainly a PhD will help, but for you and I as average hobbyists, we can easily learn the basics (and enough to understand the ideas behind the techniques and the new technology) in a few weeks of reading and experimenting.

Many hams, particularly those who have lost their curiosity and sense of perseverance, will avoid DSP, SDR, and use of newer digital modes. For example, we have all likely seen denigrators of FT8 in amateur publications and online forums. Negativity and falsehoods prevail, and some denigrators even ridicule those hams who do adopt the modes. Such an approach to the hobby and life does not support our friend Aristotle's vision of the world.

The value in preserving or rekindling our sense of curiosity is that by doing so, we can continue to learn and experiment in many new areas of our hobby.

An Example: Our CW Course

SARC is currently running its first CW course in many years. There are about 25 students, and we are nearing the planned date for the course examination. This will give successful participants their "Basic +" qualification and allow them to use the HF bands below 30 MHz.

The demographics of the course are broad. Students come from SARC, but also from several other Lower Mainland clubs. Age range is from about 13 to 83 years of age, with the average age (my estimate) likely about 50. A lot of the students have not taken a formal course in many years, but the students' commonality is that their sense of curiosity is alive and well.

Part of my challenge as the instructor in this course is to convince the students that they can learn CW, even if they have no experience with it. The instructor's role in any course is not only to present the material, but to motivate (and rekindle if necessary) each student's belief that they can learn the material. This makes learning much easier for the student.

The curiosity and perseverance factors described above are foundational to learning. While I have not talked about these factors specifically in class, we have taken some time to talk about how people learn, and how, like Laozi said, a number of small steps combine to complete a significant journey and achieve a goal. Each week we take just a few simple steps down the path.

By learning a few CW symbols a week, we have built on that foundation week-to-week until we've now learned the entire alphabet, numbers, and punctuation symbols required to meet the Industry Canada examination requirements. While people learn at different rates, I fully expect that all the students will meet the examination standard in the next few weeks.

Not mentioned so far is the need for practice. Practice is key to learning. Interestingly, Aristotle also identified practice as a key element of learning. He said in a famous example that one can't learn to play a musical

instrument just by reading a book – one must practice [1].

This is certainly true of CW, you have to practice between classes, but mental attitude and a belief in one's ability to learn serves as the foundation of success, not only in this field but any field.

Why Do Governments Support Amateur Radio?

Governments across the world recognize the value of maintaining a "communications reserve" of citizens with technical communications skills and knowledge of antennas, propagation, and communication protocols so that they can call on these groups in time of disaster, civil emergency or war. This philosophy dates back to the 1920s when nations' fledgling legislation of radio communications included allocations and licensing standards for amateur radio services.

This approach proved effective during World War II when nations like Canada, Britain, and the United States called on amateurs to enlist in the armed forces as radio operators and electronic technicians. In the US in particular, thousands of hams gave up their hobby for military service during the war and served throughout the world. "QST" magazine from 1942 through 1945 contains monthly advertisements by the armed forces leveraging patriotism and asking hams to enlist [3 – McQuiggin].

Governments maintain the same philosophy towards amateur radio today. For this philosophy to be effective, however, hams have a responsibility to keep abreast and be supportive of new modes and new technologies.

Resistance to New Technologies

To some extent, humans resist change and are uncomfortable with it. This is likely an evolutionary survival strategy that served us well millions of years ago, and which persists in our make-up to present times. We no longer need to avoid being eaten by lions (well, not day-to-day, anyway), so we need to temper this resistance to new ways of doing things and incorporate the ability to adapt into our lives.

When technological change incorporates new capabilities, better performance, or overcomes previously "impossible" limits, change should be embraced and folded into the mainstream of amateur radio or any other activity. This is one of the pillars of amateur radio.

However, a lot of hams remain indefensibly resistant to new technologies. They denigrate new technologies despite their technical or operational superiority and refuse to adopt them. As noted above, examples include that group of hams resistant to digital signal processing, software-defined radios, and new digital modes such as FT8. Similar groups also opposed advances in solid state physics, or to integration of amateur radio with the Internet or other computing technologies.

These new technologies and modes are vastly superior to older modes and techniques. How can people possibly be opposed to them?

In the 1950s, there was significant resistance to single sideband modulation (SSB) among a large group of hams who were used to amplitude modulation (AM). The resistance was illogical and based on traditional factors and historical use of AM by hams rather than defensible arguments, as the facts of SSB's superiority were clear.

The bottom line in this situation was that the group opposed to SSB was resistant to change: not because they were correct technically (in fact they were completely wrong), but because they had arguably lost their sense of curiosity and perseverance - their ability and willingness to learn and adapt to a new way of doing things.

One can make the same observations today in regard to the illogical arguments being made against SDRs, LDMOS amplifiers, or FT8 and related modes. Some amateurs remain stuck in a self-defeating "rut of convenience". By opposing modernization and adoption or incorporation of new technologies, they will never have to learn anything new. They have lost touch with their innate senses of curiosity and perseverance.

In keeping with the theme of this article, some amateurs' loss of curiosity can stagnate the hobby's overall development and keep an interesting and socially-relevant activity like

amateur radio from evolving and continuing to serve both the amateurs themselves and their communities.

Conclusion

It is important for all of us to keep abreast of modern technologies and develop our knowledge and skills throughout our lives. In essence, active minds and continual learning keeps us young, and our hobby relevant to the needs of the community and the goals of government.

By being aware of the role of curiosity and perseverance in learning and self-development, this may help us, as Aristotle described it, to "flourish and achieve" throughout our lives. With such awareness we will remain open to learning more about a wider variety of things and will have more fun in our chosen corners of the hobby of amateur radio. One of us may even invent some mode or antenna or technique entirely new!

Plus, keeping abreast of new technologies and including new aspects of technologies in our hobby will help keep amateur radio relevant to governments' philosophical goals for our service and ensure their continuing support.

Without adaptability our hobby will stagnate and be left to history. Governments will reevaluate their support of amateur radio and see no reason to support a technical cadre that refuses to keep abreast of modern technologies. This would be a shame.

That's it for this month! Feedback can be directed to the Editor, or directly to me at mcquiggi@sfu.ca.

73,

~Kevin VE7ZD / KN7Q

References

[1] Ethics in Law Enforcement, 2016, S. McCartney and R. Parent, see https://open.umn.edu/opentextbooks/textbooks/ethics-in-law-enforcement

[2] Bust of Aristotle in the Louvre, Paris. From Wikipedia, see https://en.wikipedia.org/wiki/Aristotle.

[3] Examples would include Edwin Armstrong, the inventor of the "super heterodyne" receiver, and also the inventor of frequency modulation as a mode of communication. Other examples would be John Reinartz, the framer of modern propagation theory. See "QST", October 1925, or "Probing the Sky With Radio Waves" by C-P Yeang, University of Chicago Press, ISBN 978-0-226-01519-4, or even "Amateur Radio and Innovation in Telecommunications Technology" by K. McQuiggin, National Library of Canada, https://bac-lac.on.worldcat.org/oclc/56920907

[4] Interesting reading is the book "Big Ear" by Professor John Kraus, W8JK, an account of the early days of radio astronomy and Dr. Kraus' development of innovative new types of antennae including the "corner reflector". See https://www.amazon.com/Big-ear-John-Daniel-Kraus/dp/B0006COOEA/ref=sr_1_2?keywords=%22big+ear%22+kraus&qid=1582486265&sr=8-2. A most current example of amateur innovation would be the WSJT-X suite of new digital modes developed by Dr. Joe Taylor, K1JT et al. See https://physics.princeton.edu/pulsar/K1JT/wsjtx.html.

[5] https://en.wikipedia.org/wiki/A_journey_of_a_thousand_miles_begins_with_a_single_step

Amateur Radio Emergency Assistance

Australian Wildfire Response

Amateur radio enthusiasts have proved themselves useful during the recent bushfires in Australia after traditional telecommunication channels broke down.

It was volunteers with Amateur Radio skills who were called in to assist during the recent New South Wales bushfires.

Neil Fallshaw is vice-president of WICEN NSW Communications, a group of volunteers with amateur radio licenses who can help in emergency situations.

He said about 30 members provided a temporary radio system in the Bega, Cobargo, Narooma, and Bermagui areas after some of the local radio infrastructure was damaged or had lost power.

"We deployed one of our radio repeaters on the mountains. We put a radio repeater system on that mountain to cover a portion of the south coast," Mr. Fallshaw said.

He said that radio system assisted the NSW Volunteer Rescue Association and Bega Valley Shire Council staff to communicate from bushfire-affected towns like Bermagui and Cobargo.

"They normally use just mobile phones, but the mobile phones in the area were down because of fire damage," Mr. Fallshaw said.

Members of WICEN NSW also provided support operating regular radios at fire control centres in towns like Glen Innes, Port Macquarie, and Kempsey.

"They needed people who would be able to operate the radios in a communications environment which can get pretty hectic," Mr Fallshaw said.

~ *ABC Australia*

"You have a radio in your car or your home, you can run it off batteries, you can run it off solar power — it doesn't require any connection to the internet or the electricity grid."

SARC Elmers

John Brodie VA7XB

Help Is A Message Away

As noted at the last general meeting, SARC prides itself on the knowledge and experience of its members.

In ham-speak, an "Elmer" is a more experienced ham who is available to help members with their technical problems, provide coaching on operating procedures, give advice on equipment purchases and generally offer assistance where it is needed, so that those new to amateur radio can become more proficient in pursuit of their particular interest.

You are invited to contact one of the Elmers directly or, alternatively, you may leave a message at Elmers@ve7sar.net and the most suitable Elmer will be found to meet your needs.

Here is the current list of senior members who have volunteered to act as Elmers.

~ John VA7XB

Stan Williams VA7NF	John Brodie VA7XB
John Schouten VE7TI	Kevin McQuiggin VE7ZD
Les Tocko VA7OM	Gord Kirk VA7GK
Ion Marinescu VA7ION	David Sinclair VA7DRS
Steve McLean VE7SXM	Robert Fishwick VA7FMR

Rob Gilchrist VE7CZV

Snippets

A few members got together after Saturday breakfast to sort surplus items for disposal or sale at the Burnaby Swap meet. Things are looking a lot less cluttered already.

Page 13—News You Can Lose

The Lighter Side of Amateur Radio

New Contest: Silent Key Night

By Ron Jones (K7RJ)

Silent Key Night

Announcing a new on air operating event: Silent Key Night, beginning midnight, April 1 until the bands are dead, will be an opportunity to resurrect those long lost contacts and reconnect to the old timers who have gone QRT.

In the spirit of ham radio let's get on the air for this special event and see how many silent keys we can raise. Use any mode or medium such as CW, phone, or séance. You may want to use an antenna that has a strong vertical signal and point the antenna up toward the heavens, or, depending on which silent key operator you work, you may want the reverse radiation pattern.

If you hear a distant, ghostly sound, it may possibly be one of the old time silent key operators buried in a pileup. This may be the perfect excuse you need to try to resurrect one of your dead rigs.

Don't pass away an opportunity to operate from a unique location such as a local morgue or in a cemetery. But plan ahead. If your batteries die, this will indeed be a grave situation.

Score:

- One point per silent key contact.
- One half point for each "ghost contact" (That is where you think you worked them but weren't really sure).
- Bonus: 1000 bonus points for working The Old Man himself.
- You qualify for a special certificate if you yourself are a silent key.

Don't be a deadbeat; join the fun on Silent Key Night, where the bands will be alive!

~ Ham Hijinks

iCom Does It Again!

Following on the heels of the innovative 'DigiTrix' HF Transceiver Apple Watch app introduced last year at this time *[see the April 2019 Communicator]*, iCom will be releasing its most compact handheld transceiver to date on April 1st.

The new iCom 'Micro' is a dual band 2m/70cm unit measuring only 3cm high, and weighing 20 grams! This ultra-portable boasts an impressive 5 Watts of power and uses revolutionary new dynamic inductance battery technology for extended operational periods.

The supplied 'rubber duckie' antenna is also unique in that is only extends 2cm from the transceiver yet delivers a great signal.

Small enough to fit almost anywhere, and in any Grab 'n Go kit, it's sure to be a hit with the emergency communications community.

Radio Ramblings II

Kevin McQuiggin VE7ZD/KN7Q

Collecting Micrometeorites

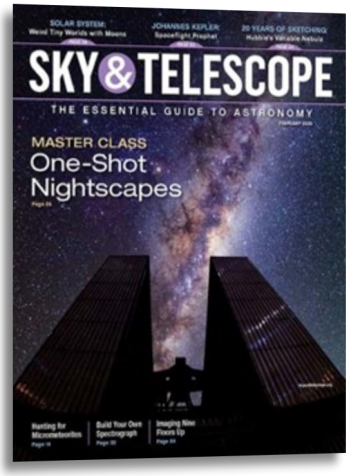


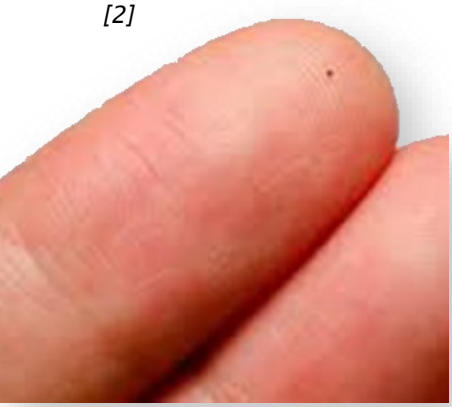
Figure 1 – Sky & Telescope Magazine [1]

I've always had a keen interest in astronomy, and have been a reader of the popular magazine Sky & Telescope [1] for many years.

The February 2020 issue of the magazine includes a very interesting article about Professor Ted Kinsman of Rochester Institute of Technology in New York (https://www.rit.edu/) whose research area is the collection of meteorites that have survived their fiery plunge to earth from space and reached earth as tiny particles of iron, nickel or titanium. See Figure 2 for an example of a typical micrometeorite.

Dr. Kinsman has collected these micrometeorites for several years. In the article he describes his collection techniques and the results of his analysis of these tiny meteorites, which range from about 300 to 500 microns in diameter. He also takes scanning electron microscope photographs of the recovered particles and analyzes their composition using electron dispersive spectroscopy, a way of non-destructively determining their chemical composition.

Figure 2 – Typical Recovered Micrometeorite [2]



Micrometeorite Characteristics

The recovered micrometeorites look quite interesting. Many of them bear the scars of their fall to Earth. See figures 3 through 6 for some typical examples [3].

Figure 3

Dr. Kinsman finds that most micrometeorites are primarily made of iron and nickel, with some containing titanium and other elements.

Physically, micrometeorites are spherical in shape and bear evidence of the extreme heat generated during their fall to earth caused by friction with our atmosphere. Ablation of the rocks' outer surfaces causes them to reach the surface as tiny spherical objects, the rest of the original space rock having been burned away.

Some of the micrometeorites bear fractures or dramatic eruptive holes on their surface (Figure 6) caused by their molten iron or

nickel interiors boiling and erupting through the outer titanium shell.

Relation to Amateur Radio

As a ham who is involved in meteor scatter communications, I found the article very interesting.

The typical meteor will enter the Earth's atmosphere at the incredibly high speed of 11 to 72 km per second [4]. Friction with the atmosphere causes ionization 100 km or more above the surface of the Earth. As amateurs we use the ionization trails of these tiny rocks as reflectors for radio signals at 50 MHz and above. QSOs with other stations at distances of up to about 3000 km are possible. I found it fascinating to think that some of the very meteors we use to support our QSOs may actually not burn up, as everyone had always surmised, but in fact survive their plunge from space to land on the Earth's surface.

Perhaps some of the recovered micrometeorites actually supported amateur QSOs on their way to the surface of the earth!

Collection Techniques

In the article, Dr. Kinsman says that he collects these tiny micrometeorites by using powerful permanent "rare earth" magnets such as the one shown [5] in Figure 6. As most micrometeorites are composed of iron, a ferrous metal, they are easily picked up by magnets and stick to the magnet's collecting surface.

He describes how he has collected micrometeorites by "magnet fishing" in cracks at the bottom of shallow streams in the eastern USA, and by placing magnets in the gutters of the roof of his home. He and his students have also had some success by placing magnets in the runoff areas of his university's parking lots. Meteors fall to the surface of the roof and are washed into the collecting magnet in the gutter by rainfall, or from the parking lot's surface towards the magnet by running water after a rain.

Effects on Earth

These micrometeorites have been falling to earth for millions of years. While the mass of micrometeorites is undoubtedly miniscule compared to the mass of the Earth, it was interesting to me to think that the Earth is continually gaining exposure to rocks which have been wandering in space for eons.

Conclusion

While astronomy is not really related to the hobby of amateur radio [6], nonetheless I love reading about our universe and the technologies associated with its exploration. I found this article quite interesting, and based on my enjoyment of meteor scatter, I thought that readers might find it interesting too.

Feedback on this article may be directed to the Editor, or directly to me at mcquiggi@sfu.ca.

73,

~ Kevin VE7ZD / KN7Q

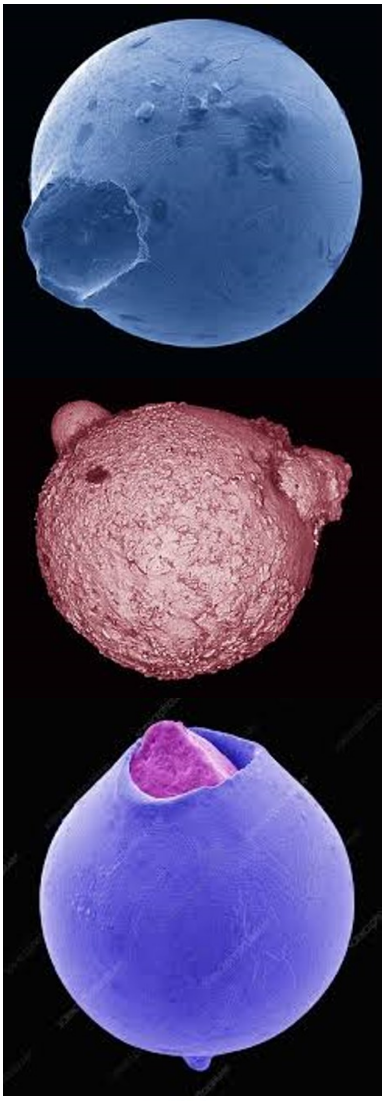


Figure 4,5 and 6.
Fig 7 [Bottom] Rare Earth Neodymium Magnet

References

[1] Sky & Telescope, February 2020, page 14. https://www.skyandtelescope.com/sky-and-telescope-magazine/inside-the-february-2020-issue/

[2] https://encrypted-tbn0.gstatic.com/images?q=tbn%3AANd9GcQFNoCrYQqIKAvNnvqHjBqLot7wtIUh9G83NPGvaZ-rAElizIOy

[3] All images from Sky & Telescope, https://www.skyandtelescope.com

[4] That's up to 160,000 miles per hour! Source: American Meteor Society, https://www.amsmeteors.org.

[5] These magnets are available at low cost on Amazon, e.g. https://www.amazon.com/Fishing-Magnet-Neodymium-Magnetic-Magnets/dp/B07CNBCZXK.

[6] Radio astronomy is in fact closely related to our hobby, and a very large percentage of radio astronomers are also ham radio operators. This may be a good topic for a future article!

73 "Best Regardses" and "Best Regards's"

Tomas NW7US

That's silly, of course. We who speak and write in the English language know that you should not pluralize a word that is already in its plural form. "Best regards" means, "I wish you the best of regards." It is implied that there is more than one regard. Perhaps there are a few, perhaps many more. It then is clear that we wouldn't normally pluralize "regards," into, "regardses."

It is also silly to say that the best of regards owns something. How can a regard let alone a group of regards own anything? So, why "73's" when written?

The usage of "73" comes from early landline telegraph (typically railroad telegraphy landlines). Originally devised in the era of telegraphs, 73 and other numbers were used to speed up the transmission of common messages over landlines by mapping common messages to these specific numbers. And, numbers were quicker to send than the longer messages the numbers replaced.

QST, April 1935, on page 60, contains a short article on the origin of the amateur radio vernacular, 73. This article was a summation of another article that appeared in the "December Bulletin from the Navy Department Office of the Chief of Naval Operations," published December of 1934.

Here's a quotation from that Navy article:

"It appears from a research of telegraph histories that in 1859 the [land-line] telegraph people held a convention, and one of its features was a discussion as to the saving of 'line time.'

A committee was appointed to devise a code to reduce standard expressions to symbols or figures. This committee worked out a figure code, from figure 1 to 92.

Most of these figure symbols became obsolescent, but a few remain to this date, such as 4, which means "Where shall I go ahead?'. Figure 9 means 'wire,' the wire chief being on the wire and that everyone should close their keys. Symbol 13 means 'I don't understand'; 22 is 'love and a kiss'; 30 means 'good night' or 'the end.'

The symbol most often used now is 73, which means 'my compliments' and 92 is for the word 'deliver.' The other figures in between the forgoing have fallen into almost complete disuse."

We can see, then, that "73" mapped to "best regards" or "my compliments" and was intended as a general valediction for transmitted messages. That's why it is silly to say, "73s," as that maps to, "best regardses" – 73s adds the plural to a plural. (And, don't make it possessive, as in using, "73's" – a regard cannot own something).

For reference and some more interesting background on this, see http://www.signalharbor.com/73.html

An example of on-the-air conversation (or, QSO—"QSO" is the shorthand Q-code for, "two-way exchange of communications") illustrates proper usage of 73. When saying your goodbye, you would tap out the Morse code as follows:

TNX FER FB QSO. C U AGN. 73 ES HPY NEW YR.

That is interpreted as, "Thanks for the fine-business chat. I hope to see you again for another chat. Best regards and happy new year."

If you choose to throw around shorthand Morse code number codes when you are speaking, you wouldn't say, "73s." You would say, "73." – some say you should speak it thus: "Seven three." Others say, "Seventy-three." Since these were number codes, sequential, it makes perfect sense to say, "Seventy-three."

My friend, David Edenfield, opined, "This idea is beyond turning into glue from the dead horse it's beating again. This is so petty to be concerned with this. Even the Old Man Hiram Percy Maxim 1AW used 73s on his QSL cards."

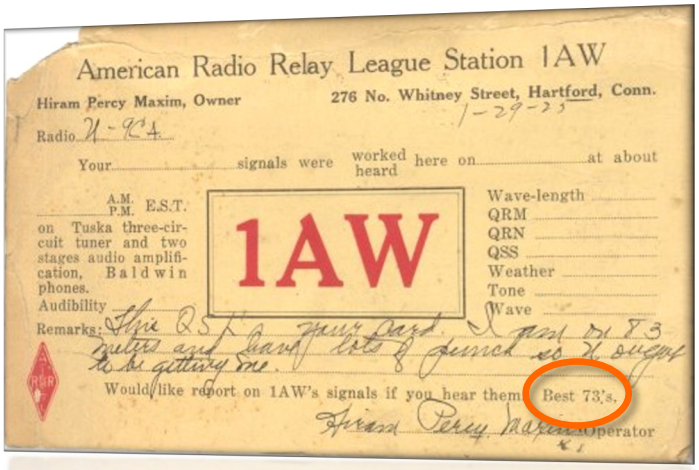
Well, even Hiram Percy Maxim has been incorrect and incorrectly used grammar. (chuckle)

There is something to be said about teaching new amateur radio operators the best of our traditions, history, skills, procedures, protocols, ethics, and culture. There's no rational argument that can make a case that allowing these aspects of our service and hobby to degrade over time (by the lack of Elmering) is a good way to see our service and hobby thrive and progress.

I don't see any slippage from high standards as being a good strategy for nurturing growth, progress, and effectiveness of our service and hobby. Keeping some level of excellence in every aspect of our hobby can only be beneficial.

In this case, how many new hams that learn to repeat ham lingo know anything of the history behind the common "73?" My dead horse turned glue is educational and it is my belief that educating about origins elevates the current.

~ 73 NW7US


American Radio Relay League Station 1AW

Hiram Percy Maxim, Owner 276 No. Whitney Street, Hartford, Conn.

Radio 1-29-25

Your signals were worked heard here on at about

A.M. P.M. E.S.T.

on Tuska three-circuit tuner and two stages audio amplification, Baldwin phones.

Audibility

1AW

Wave-length
QRM
QRN
QSS
Weather
Tone
Wave

Remarks: Fine QSO, your card is OK and QSL 73 miles and many lots of fun and so to bed to be getting me.

Would like report on 1AW's signals if you hear them. Best 73's.

Hiram Percy Maxim Operator

A DMR Primer

Our Meeting Presenters Say Its The Way Of The Future...

Digital Duel: Options & Choices

- Each standard was built for a different audience:
  - DMR, P25 & NXDN for Commercial, good in places where 'things' can get in the way
  - DStar by Hams in Japan, close repeaters, less bad terrain, trees etc.
  - Fusion by Hams, also good where 'things' can get in the way

Standard	Modulation	Channels	Bandwidth	Highway Analogy
DMR	4 FSK Error Correction AMBE+2™	2 TDMA	12.5 kHz (6.25 ea)	1 lane road, 2 cars alternating
D-STAR	0.5 GMSK (phase shift) Error Correction	1	10 / 6 kHz voice	1 lane, 1 car & small trailer
NXDN ph2	4 FSK Error Correction AMBE+2™	2 FDMA	12.5 kHz (6.25 ea)	1 lane road, 2 cars parallel
System Fusion / C4FM	C4FM Error Correction	1	12.5 kHz	Private road. Yaesu only.
P25 ph2	C4FM Error Correction AMBE+2™	2 TDMA	12.5 kHz (6.25 ea)	1 lane road, 2 cars alternating

Features Comparison

https://www.mikemyers.me/blog/2016/2/19/d-star-dmr-fusion-which-is-right-for-you-7nhdl

Feature / Item	D-Star	DMR-Marc / Brandmeister	Fusion Wires-X
Ease Of Use	Easy	Easy	Easy
Ease Of Programming	Easy	More Difficult	Easy
Multiple Manufacturers	Few	Lots	One
Cost ($US)	$299 - $899	*$79 - $199	$299 - $700
Flexability	High	Low/High	High
Survivability	High	Low/Medium	Low
Access The Network via "Non Radio"	Yes	Yes	No
Extendability	High	High	Low
Multi-band Radios Available	Yes	Yes	Yes
Field Progammable	Yes	Some	Yes
Connectability	Yes	Yes	Yes
Voice Quality	Good	Great	Great
Sends ID (call sign)	Yes	No, DMR ID # only	Yes
GPS	Yes	No / Yes	Yes
Can Send Data	Yes	SMS	Yes
Bandwidth kHz	6.25 / 10 w data	12.5	6.25 / 12.5
Voice Channels	1	2	1
Error Correction	Good	Great	Great
Mixed Mode Repeaters	No	With Limitations	Yes
Ease of Multi-User	Good	Poor	Good

A recent SARC meeting featured two guests, Doug Pattengale VE7CQT and Brad Wilson VA7BWX, who have been heavily involved in local Digital Mobile Radio (DMR). They have kindly agreed to share their presentation slides.

DMR is a limited open digital mobile radio standard defined in the European Telecommunications Standards Institute (ETSI) Standard TS 102 361 and used in commercial products around the world. In the commercial world, DMR, along with P25 phase II and NXDN are the main competitor technologies in achieving 6.25 kHz equivalent bandwidth using the proprietary AMBE+2 vocoder. DMR and P25 II both use two-slot TDMA in a 12.5 kHz channel, while NXDN uses discrete 6.25 kHz channels using frequency division and TETRA uses a four-slot TDMA in a 25 kHz channel.

DMR was designed with three tiers. DMR tiers I and II (conventional) were first published in 2005, and DMR III (Trunked version) was published in 2012, with manufacturers producing products within a few years of each publication.

In our Amateur Radio world, DMS is one of three main digital radio technologies, with iCom D-Star and Yaesu System Fusion as earlier players.

The primary goal of the standard is to specify a digital system with low complexity, low cost and interoperability across brands, so radio communications purchasers are not locked into a proprietary solution. In practice, given the current limited scope of the DMR standard, many vendors have introduced proprietary features that make their product offerings non-interoperable with other brands.

To view or download the presentation, visit:

https://ve7sar.blogspot.com/2020/02/a-dmr-primer.html

Our thanks to Doug and Brad for an informative evening.

TECH TOPICS

John Brodie VA7XB

More Nifty Features of the RigExpert AA-600 Analyzer

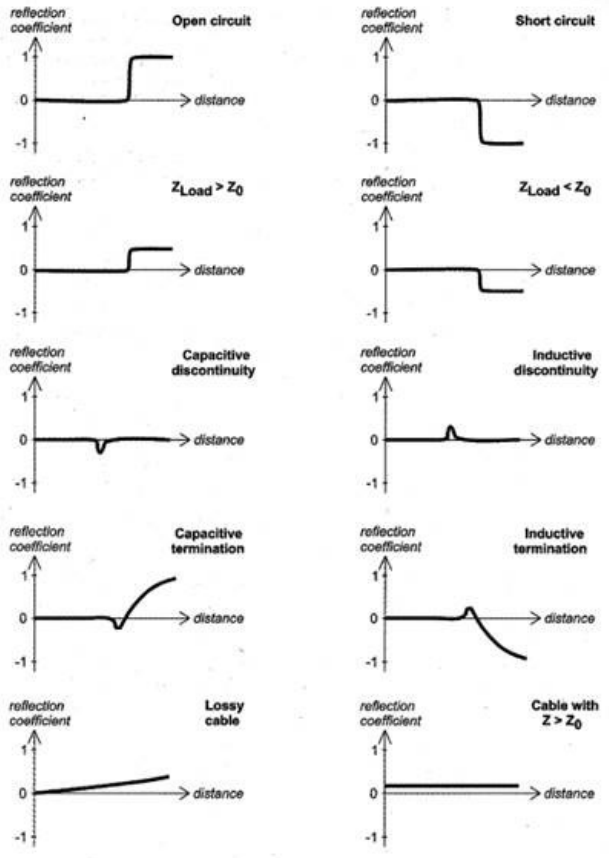
There is no better way to learn about a subject than to write an article on that subject. What you will often find in explaining a technical concept to others, is that your ignorance is soon revealed and you must dig deeper before your Epiphany moment comes. Such was the case here.

In the Jan-Feb Communicator, we reviewed one of the nifty features of the versatile RigExpert AA-600 analyzer, specifically its use in determining the value of unknown capacitors and inductors. This time, we will look at using the instrument's TDR function to examine characteristics of RF transmission lines, including the location of defects and antennas (or any impedance change) on the line.

Time Domain reflectometers (TDR) are electronic instruments used for locating faults in transmission lines. Normally this is done by sending a short pulse or stepped function over the line and observing the reflected pulse, in conjunction with specification of the cable velocity factor (for LMR 400 coax, for example, the velocity factor is about 0.85; for RG58 it is 0.66).

The AA-600 determines R and X (the real and imaginary components of Z, the impedance) over a range of frequencies and mathematically calculates and graphs the impulse response and step response versus distance from the source.

Single or multiple discontinuities can be displayed on the resulting graphs: With this instrument both IR (impulse response and SR (step response) functions are displayed on the resultant graph. IR is suitable for measuring distance of an impedance discontinuity and SR helps indicate the cause. Graphs showing typical TDR step responses from the AA-600 manual are shown below:



Let's see what we get with some real life situations. It does not matter what frequency is set on the instrument. Pressing simultaneously the function (F) key and 4 on the keypad followed by ∫ starts the TDR, which takes about 1 minute to complete the measurements, calculate the transformation and graph the results. The red trace is IR and the green trace is SR. The horizontal scale is distance and the vertical scale is reflection coefficient (symbol ρ, defined as the ratio of the amplitude of the reflected wave to the incident wave).

Fig. 1 shows the result for a dipole (SteppIR beam) connected to the instrument with LMR 400 coax. The antenna appears to be about 25 m from the source. At distances of less than 25 m, the displacement of the SR trace above 0 suggests either the velocity factor is not exactly 0.85 as specified for this coax, or else the transmission line's impedance is higher than 50 ohms.

So in the AA-600 settings, the velocity factor was changed to 0.88 and, as seen in Fig. 2 below, the SR trace at least started out close to zero. With this change, we also observe a different calculated length of the line, now 28m. The slight upward slope of the SR trace indicates some loss on the transmission line. Maybe it's time to get new coax – it doesn't last forever in the sun and rain.

Figure 1 TDR trace for resonant antenna assuming velocity factor = 0.85

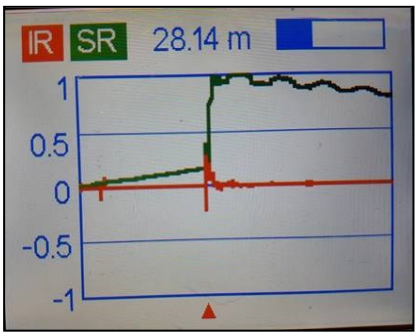


Figure 2 TDR trace for the same antenna assuming velocity factor = 0.88

Fig. 3 shows the TDR result for a quarter wave vertical connected to the source with a longer length of LMR 400 coax. We note an impedance bump at 37.8 m from the source, representing the matching circuit and junction of antenna and ground. The small initial bump in the IR trace is likely a result of the coax connections at a surge suppressor close to the source. This time we see no apparent loss over the length of the coax which terminates at 37.8 m. Better coax this time?

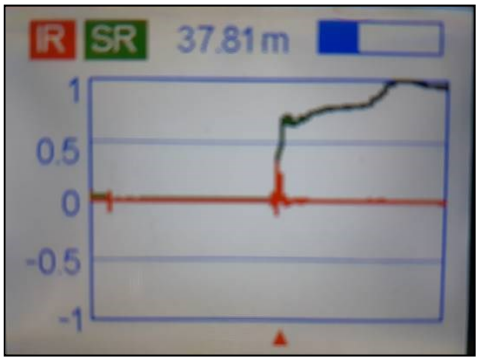


Figure 3 TDR trace for vertical antenna

Fig. 4 shows the TDR trace for a 23 m length of RG 213 coax open at far end. The steep rise is a result of reflection of the incident wave at the end of the wire.

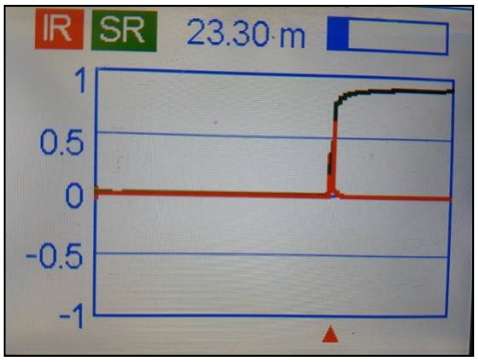


Figure 4 TDR trace for RG 213 coax open at the far end

Fig. 5 shows the TDR trace for the same length of RG 213 used in the previous example, but it is terminated by a 50 ohm non inductive resistor. There are no reflections from this load as all the energy is absorbed by the matched resistive load. The would be true at all frequencies.

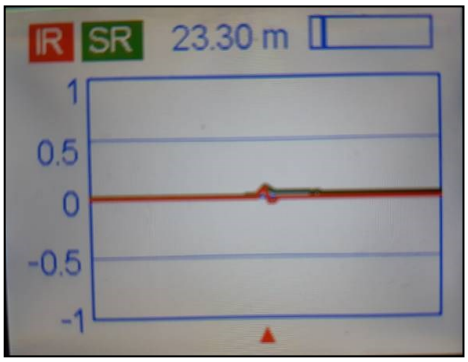
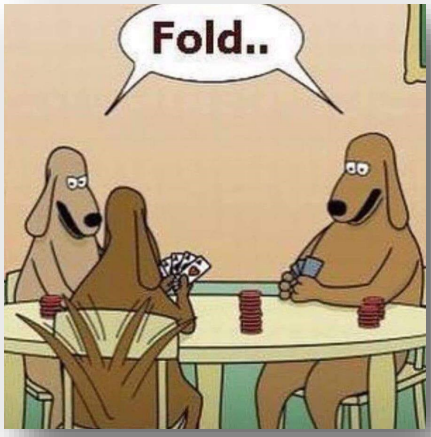


Figure 5 TDR trace for same length of coax as Fig 4, but terminated with 50 ohm resistor

So the TDR function is very useful to check the health of your feedline, or diagnose the location of a problem such as damage to the conductors, or poor a connection which will show as an impedance discontinuity or reflection point. Next month, do I dare attempt to explain how to use and interpret the AA-600 Smith chart graphing function? Yikes, now there's a challenge.

~ John VA7XB



SEA-PAC® 2020 Registration Is Now Open

Online registration is now open for SEA-PAC 2020, the largest Ham Radio convention in the Pacific Northwest and the ARRL Northwest Division convention. As in year's past, it will be held at the newly remodeled Seaside Convention Center, on the Pacific Ocean coast at Seaside, Oregon.

To register, go to the SEA-PAC website and click on the Registration tab on the left.
https://www.seapac.org

Registering early has its advantages. You'll be in the front of the line to buy tickets to the Gala SEA-PAC Banquet, the Friday Workshops and the DX and YL Luncheons, all of which sell out before the convention. If you register before April 15th, you'll be automatically entered into an early bird prize drawing.

The SEA-PAC Collector Pin design contest closes on March 1st , so get your entries in now. The winner will receive 2 free tickets to the Gala SEA-PAC Banquet. Rules are available on the SEA-PAC website - click on the "SEA-PAC Pins" tab.

See you in Seaside at SEA-PAC 2020!

Tech Topics II

Daniel Romila VE7LCG

Using A Power Bank As A Power Supply

I recently became the owner of a 10 Amp power bank which is indeed a 10 Amp power bank, as declared. I use it as the power source for a heated jacket. I paid only around C$20 (shipping and taxes included), but I saw such power banks on sale on the Chinese websites for as little as C$11. I do not use the power bank much, so I was thinking that maybe it could be useful in my ham radio projects too.

I doubt that I am the first one with such ideas, so I immediately looked on the Internet for similar projects. I found this, which I bought for C$14 (shipping and taxes included), from aliexpress.com *[shown lower left]*.

I was lucky, because it really looks like somebody else did the work for me; I just connect it on top of the power bank, and I have adjustable (digitally adjustable, not an analog potentiometer that will fail over time) output between 0.6 Volts and 30 Volts. That means that I can use it even for heating miniature tubes which require 1.2 Volts for the filament. The output can be connected with wires, inserted into the dedicated output connector which is pressed — no screwdriver needed.

This toy even has an LCD display, which can rotate in whatever position one needs from 4 choices. There are all kinds of displayed measurements. The output current can be limited. It can even display the internal and external temperature, but unfortunately, it does not come with the external temperature probe. This is a switching power supply, with a declared efficiency above 90%.

I could go with cheaper versions. The cheaper versions seem to use the same active electronics inside as the more expensive one shown here, and they are cheaper just because they have a simpler display. For C$11 (shipping and taxes included):

And for C$5.14 (shipping and taxes included) there is a version with multiturn analog pots, which probably would not survive many manipulations.

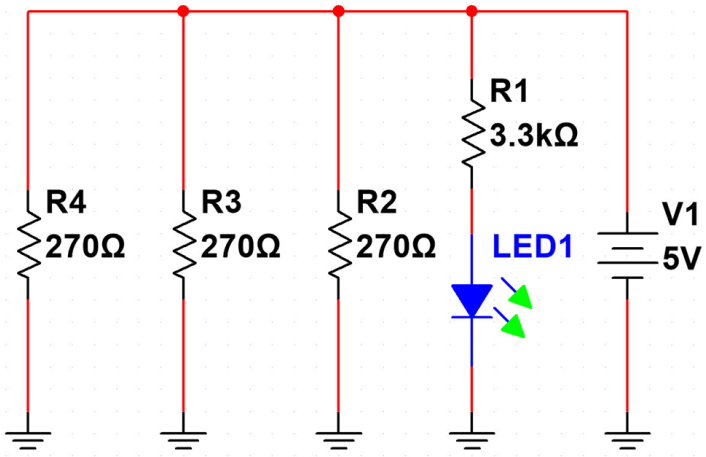
All the above power sources can output a maximum 15 Watts.

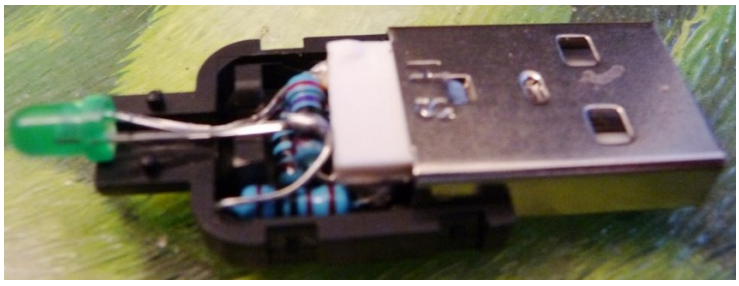
Those of you who have already used a power bank know that they have a habit of sleeping after a while, if the current drained from them is lower than 50 mA. There are even special devices made for triggering the power supply from time to time to force it ON. The brute force method would be to put a 100 ohm resistor at one of the 5 Volt outputs. That is a continuous draining of power, inefficient, but keeps the power bank doing its job.

I was almost sure that I would not experience having less than 50 mA consumed by my ham radio projects, but it has happened with some Arduino projects, which I expected would ask for more current than they do. So, I really needed to make a dummy load, and quick. I have only small wattage resistors so I put three 270 ohm resistors in parallel. That results in 90 ohms, under the threshold of 100 ohms, which is good. I also put a 3 mm green LED in series with a 3.3 kilohm resistor. It gives enough light.

Usually I do not need the dummy load and this is why I made it separate. If I need it, I plug it in and it lights, making it less likely that I will forget and completely drain my power bank.

~ Daniel VE7LCG





I put everything inside a USB connector

In the end, my dummy load with the power bank:

Tech Topics III

Daniel Romila VE7LCG

Instant Gratification:

A Weather Station With The BME280 Sensor And SSD1306 Display

Many hobbyists want to enter the microcontroller world and are scared by the complexity of such projects. The Arduino boards and programming software made life easier. Still, it can be an enthusiasm killer to spend some 5 – 8 Euro and get just a simple LED to switch ON and OFF when a push button is pressed.

With the same amount of money it is possible to construct an Arduino project which can be useful, fun, and complex enough to be shown to friends to impress them. I am describing a project which is capable of displaying on a 0.96 inch OLED display the temperature, humidity and pressure. I wrote the code myself , although there are plenty of such projects available on YouTube. I kept it as simple as possible and I wanted the display to be simple and easy to read. On some of those projects you will also see the altitude displayed. The altitude is not something that comes from the sensor. It is the result of a calculation based on pressure at sea level in your area on that day, temperature, and so on. I stayed away from it.

You can see it in operation at: https://www.youtube.com/watch?v=866se58derI

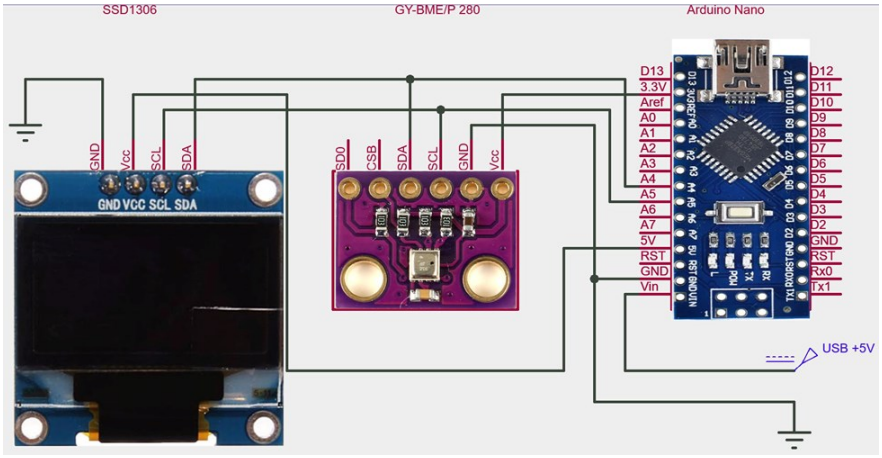
I also built the same schematics with a cheaper board than the Arduino Nano, called TTGO Xi. This board has a more powerful microcontroller in it, but it accepts to be dummied down to the Arduino Nano level, without any change in the code. And yes, it is cheaper.

You can see it in operation with the TTGO Xi board at: https://www.youtube.com/watch?v=PVOWA6O3Fpg&feature=youtu.be

The code, schematics and pictures are posted at: https://github.com/danielromila/Weather-station-with-Arduino-Nano-and-BME280-and-SSD1306

It is necessary for you (or a friend who can help you for a few minutes) to know how to use the free program IDE in order to load the code into the microcontroller board. You need the predefined libraries: Adafruit SSD1306, Adafruit GFX, Adafruit BME280 and Adafruit Sensor. They are free. If you eventually try to run the code without them the program tells you it wants exactly those libraries – so it easy to know what to do.

The schematics with the Arduino Nano

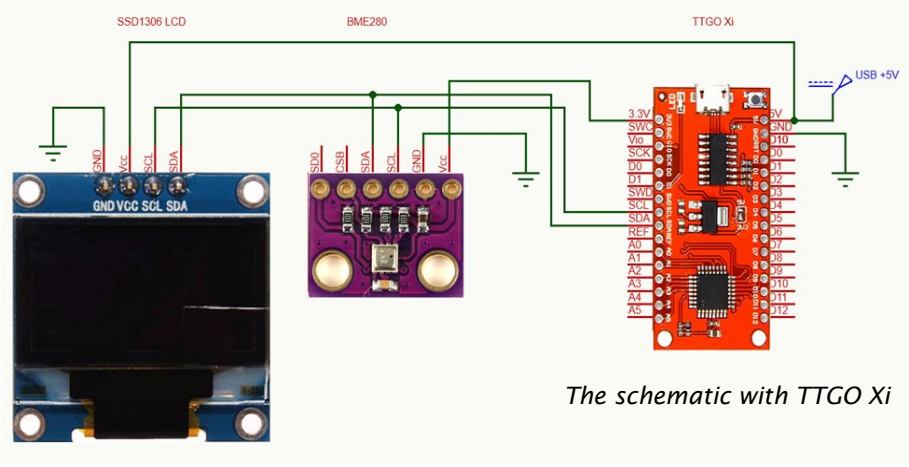


In order to work with the cheaper board TTGO Xi one needs to have copied into the Arduino libraries folder everything that is at:

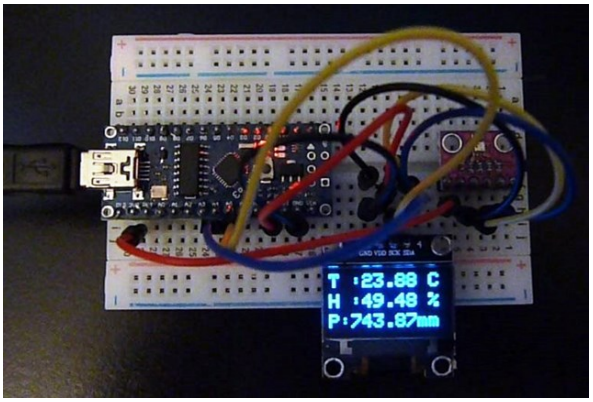
https://github.com/LGTMCU/Larduino_HSP

On that site you can find all the supporting packages for the LGTFs microcontrollers boards.

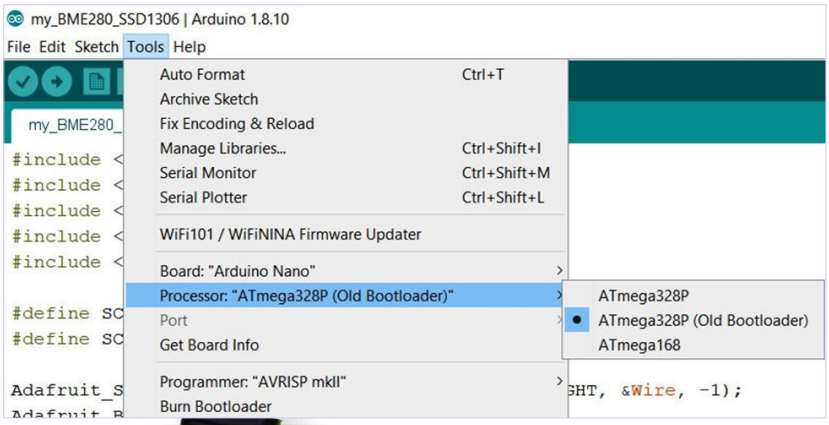
Whenever you want to load the code into the microcontroller board it is a good idea to verify that you selected the correct board that you bought and are using, and the right communication port. The Arduino shows me which port I have to choose. Everything else is grayed out. I also set the bootloader as the "old bootloader" *[as shown below]* because all my boards are not original and work only with this version.

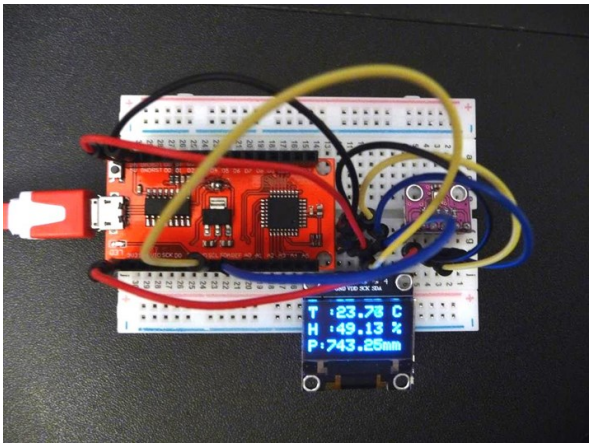


The schematic with TTGO Xi



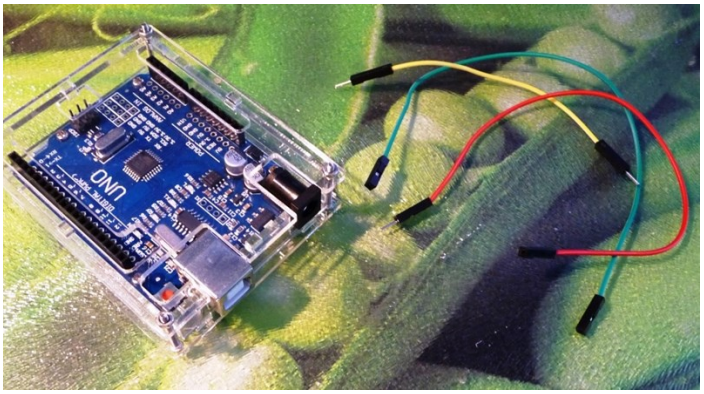
The breadboard with Arduino Nano





The breadboard with TTGO Xi

Left: Since I just happened to have more TTGO Xi boards at the moment I made a more permanent soldered version that waits to be put in a case.



Now that you have it functional you can play with modifying the code. You can increase/decrease the font, change the units in which the measurements are displayed by introducing simple arithmetic formulae, and so on.

As always, I recommend constructing a new Arduino project – or simply playing with it – preferably with the Arduino UNO board first. Arduino UNO can have power supplied from a wider range of values. It is bigger. It already has headers. All schematics – if UNO and NANO have enough processing power for it – usually refer to the UNO board. With a bunch of DUPONT jumper cables combination MALE - FEMALE, as shown in the picture *[left]*, it is not even necessary to use a breadboard.

~ Daniel VE7LCG

On the Air Magazine and Podcast

Geared to the new or returning Amateur, the *On the Air* podcast is a companion to the bimonthly *On the Air* magazine (an ARRL membership benefit) and takes a deeper dive into select features and projects. Each month, host and *On the Air* Editorial Director Becky Schoenfeld, W1BXY, will offer additional resources, techniques, and hints to help you get the most from the magazine's content.

Listen Now:

Blubrry

Apple iTunes **podcasts.apple.com** (or by using your iPhone or iPad podcast app, search for On the Air)

Stitcher **app.stitcher.com** (or through the free Stitcher app for iOS, Kindle, or Android devices)

Episode Guide:
View a complete list of episodes and listen now (Blubrry)

~ ARRL

Tech Topics IV

Daniel Romila VE7LCG

CAD For Electronics and Virtual Breadboards

Drawing schematics by hand is fast and can be enough for somebody who mostly works alone and does not really want to publish the schematics in magazines. Even so, using a computer assisted design (CAD) program for drawing electronic schematics can become useful.

I would like to stop here and begin by making several confessions from my own experience:

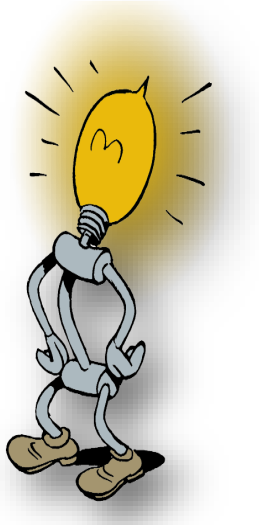
- Drawing/doodling an electronics schematic by hand will always be faster than doing it in a computer program;
- Drawing a nice, easy understandable electronic schematic by hand will always take more time (at least for me) than doing it in a dedicated software; it also depends on how much experience one has with that CAD program;
- There are several advantages to using a CAD, especially about the simulation, optimization and automatic generation of the PCB (printed circuit board) capability. I would also mention here that keeping and using several versions of the same schematic, introducing and seeing measured values like voltages and currents without soldering anything, optimizing and choosing the right components, with the right parameters, is an advantage after seeing what requirements there would be in a CAD simulation.

There is a long debate which CAD is better for ham radio. Which one is better for a certain task. My answer is simple. The best computer program is the program you like to work with. Many people trained in university environments like Multisim and Proteus software, because this is what they initially used. There are many reasons for that apart from "the duck effect", and I am one of those liking Multisim and Proteus. The closest free package coming in at the same level of power is KiCad, although at a distance from the first two contenders. I will come back to this at the end of this article with simple proof.

But I can definitively say that the best program for somebody is the program that person feels it is a pleasure to work

Note: All the pictures and schematics shown in this article can also be found in higher resolution at: https://github.com/danielromila/Bi-tonal-siren-with-NE555

Video of the project in operation can be seen and heard at: https://www.youtube.com/watch?v=YsICmpTGsQ4

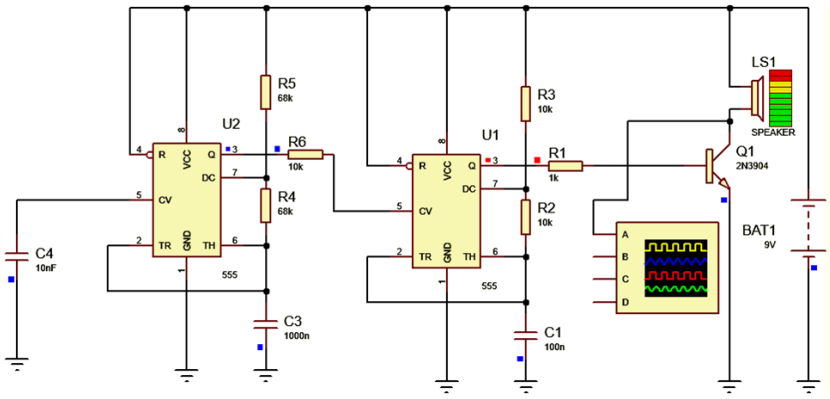


We have featured a number of articles using the Arduino. Please check our back issues, available at https://VE7SAR.blogspot.ca

Specifically the January 2019 issue provides a lot of basic information about Arduino operation and use.

with. Anyhow, for teaching, preparing lab experiments for students, article publishing, it is necessary to use CADs. The most difficult step is to start somewhere, and this article comes with some ideas, and advocates for the use of CAD.

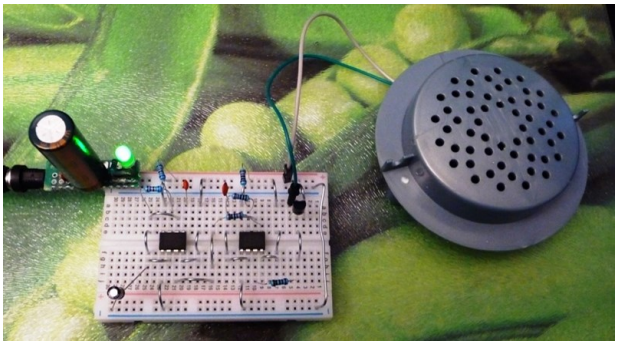
I choose an easy example, the project of making an alarm with two tones. It can be used for so many purposes. I have drawn the schematics in Proteus, and now it looks like this:



The two integrated circuits are NE555 timers. It is also possible to use one single integrated circuit NE556, which contains two timers in one capsule. U1 generates the main tones, and the switch between the two audio frequencies is commanded by U2. It is a fast di-dow-di-dow generator. The final transistor is a bipolar 2N3904, which gets a little hot and can eventually be replaced by a more powerful one, like 2SD882 or BD139. The change of tones is just a bit fast and that was chosen on purpose, to generate nice and clearly visible oscilloscope images.

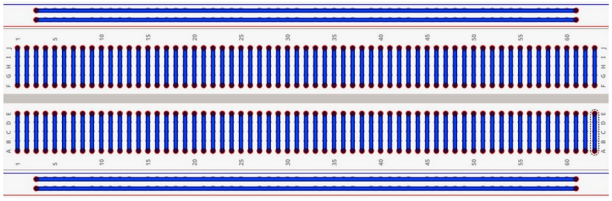
Coming back to the subject of this article: Yes, I would have drawn this faster by hand than by using Proteus on the computer. But my lines would have not been so straight, and the integrated circuits would have never been true rectangles. By using Proteus CAD I could not even mistake the pinout and the name of the pins, because they are computer generated. When using Proteus, if I forget the ground somewhere, the schematic will not simulate properly, so it is an additional safeguard for not drawing schematics that will never work.

For the purpose of this article, I really did construct the whole project, and here is how it looks on the real breadboard:



You can see it and hear it in operation at: https://www.youtube.com/watch?v=YsICmpTGsQ4

Breadboarding is a fast method to really make something without soldering. A reminder here how the outside of such a breadboard looks (and how the plug points are connected among them).



The capacitance between two adjacent lines (the short ones) is something around 6 pF. This limits the usability for VHF and UHF circuitry, but it should be OK for any frequencies under 30 MHz. I forced myself to work on breadboard projects above 100 MHz, but I do not recommend it.

There are many free programs worth trying in order to make it easier to start with CAD for electronics and ham radio. They do not have as many components in their libraries. Some do not allow any simulation at all. But they are easy to learn and able to have results. A simple schematic drawn and saved on the computer in about 10 – 30 minutes. It is a start.

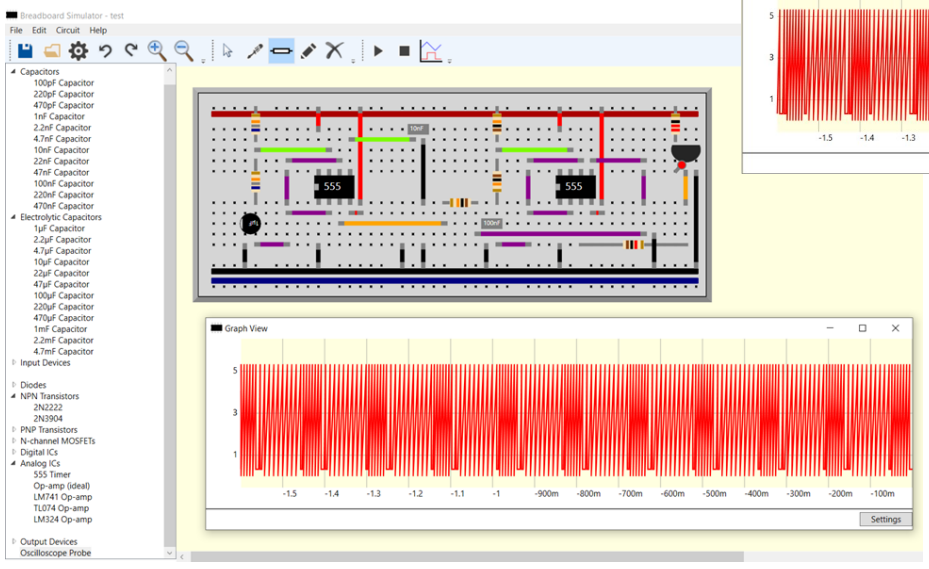
A program well known for simulating on breadboard, showing the schematics and the PCB is Fritzing. It has its home page at: https://fritzing.org/home/

There are already many tutorials about Fritzing available on the Internet and I did not feel like presenting it in more details. Another reason for not using Fritzing in this article it is that such use would require hunting two rabbits at once, which is not easy:

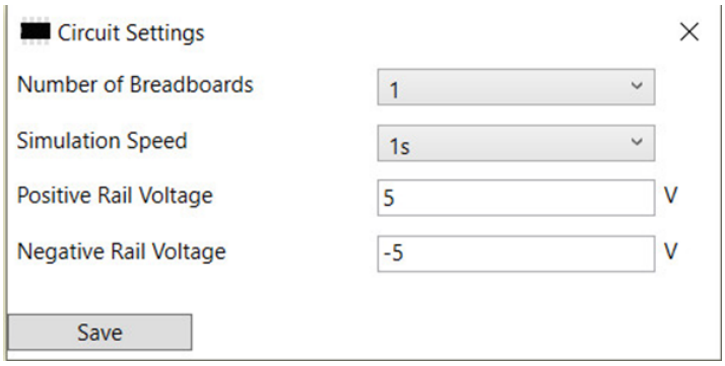
- Trying to learn to use a CAD, and Fritzing is by no means simple, nor intuitive in all its tasks (being so complex);
- Fritzing is specialized for Arduino projects. So using Fritzing would require the daunting task of learning Arduino and microcontrollers at the same time as learning to use a CAD for schematic drawing. I really think it would be too much at once.

But I did find a simple breadboard simulator. Unfortunately it knows very few things, but is perfect for the beginner. Its home page is at: https://ds0.me/csim/ The program can be downloaded and used directly on a windows computer. It is a portable program – that means it does not require installation. Just double click the executable file, and it works. If you want to get rid of it, you can simply delete it. No uninstall procedure involved or required.

The window of Breadboard Simulator v1.0, with my schematics in it, on the breadboard is:



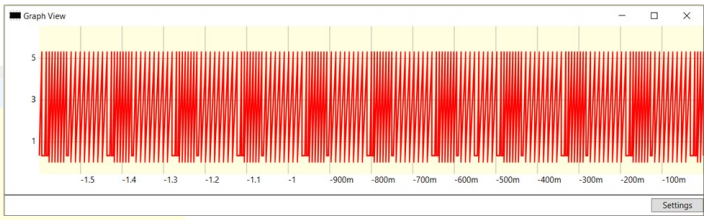
The breadboard has a red line for + power supply. The black line it is for the – of the power supply. No need to specify you want a battery there – the program already makes the + and – voltage supply. They are already predefined in the settings:



One can change those values, but it is good that there is something already defined and ready to work with.

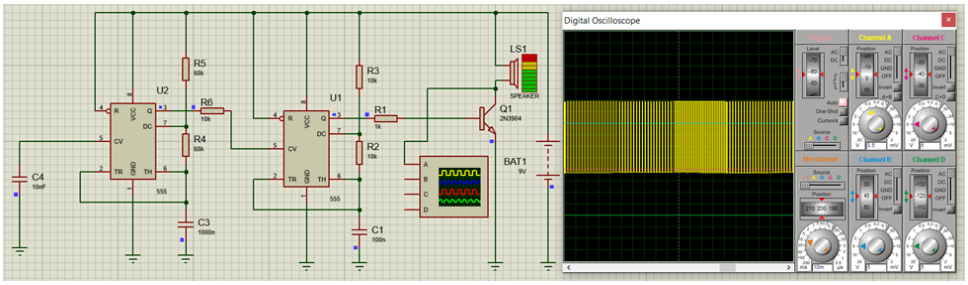
There is also a blue line available for eventual use (not used in my example).

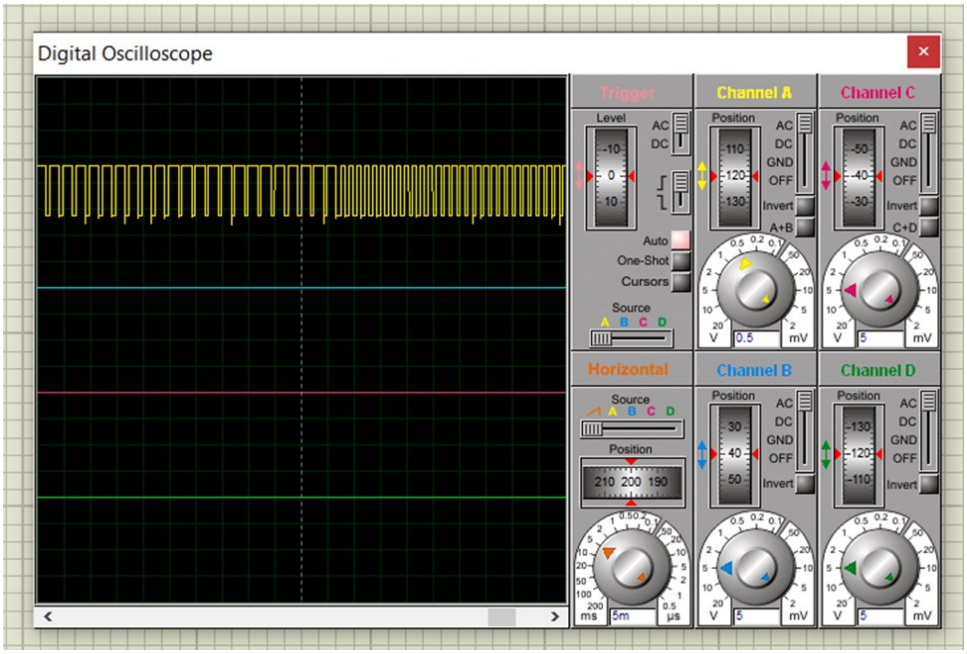
There is no schematic shown in this program. Everything is done in a virtual breadboard, with just a few components available in the libraries. But it is possible to attach a simple oscilloscope to the breadboard with two spots/channels, one shown in red and one shown in blue. I showed only one (red). The oscilloscope displays as expected a train of higher and lower frequencies:



So using a CAD let us know the project works, and how it works, without soldering any component, without even buying any component.

I was mentioning that some CADs are very powerful, and I immediately exemplified Proteus and Multisim. While I mostly use Multisim myself , Proteus is the only CAD for electronics (at least the only CAD that I know of, and I know some) that can use the computer sound card as the output for the schematic. The free Breadboard Simulator showed us the waveform. Proteus not only shows us the waveform, but when I press the RUN simulation button, I really hear the sound generated by this schematic on the speaker output of my computer. If I change the





value of some resistors and capacitors, I hear a different sound coming from the computer speakers. The LS1 from the right side of the schematic is defined in Proteus library as being the sound card output of the computer on which Proteus was installed *[left]*.

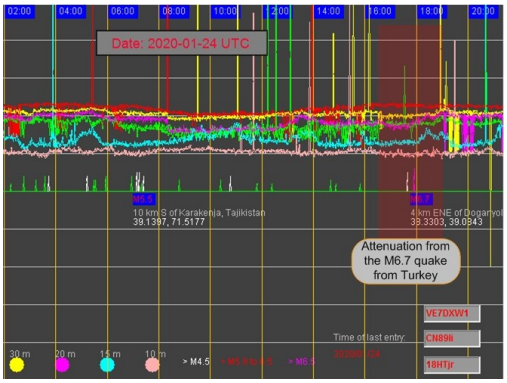
The oscilloscope also operates as a component of the schematics, and one can handle its buttons like one would do with a real oscilloscope *[lower left]*.

Multisim also contains complex oscilloscopes that can be placed on the schematic, but produces no output through the sound card of the computer. The student and academic editions of Multisim can show a breadboard where one can place the components from the schematic. They are not automatically placed.

I hope this article showed by example some advantages of using CADs for electronics and for ham radio. I chose a simple example that really works and does something, and that can eventually be replicated by Communicator readers.

~ Daniel VE7LCG

M6.7 Quake from Turkey affects 40 m Net in North America



The RF-Seismograph has picked up the strong earth quake 4 km ENE of Doganyol, Turkey. The quake was reported by USGS at 2020-01-24 17:55 UTC. It created a strong attenuation of the shortwave radio bands, especially on 40 m, in advance of the quake. In North America the popular 40m net on 7.2835 MHz was severely disrupted. The RF-Seismograph recorded the eminent quake more than 1 hour earlier at 16:30 UTC! The ionosphere was still very weak thereafter but recovered.

We record many quakes and they do appear to effect propagation! So if you are interested to learn more about it, join the RF-Seismograph group at: MDSR.io. The RF seismograph is experiments. The theory behind it is new and under scientific evaluation.

~ Alex VE7DXW

Tech Topics V

John Brodie VA7XB

Reduced Output Power

I have personally encountered the problem described below with blade fuse deterioration and/ or corrosion twice at my station and it is so common that it bears reiteration. However, this is the first I have heard of corrosion at Power Pole connections. As others have suggested, it is worthwhile to use your voltmeter to check voltage drop across the various items, especially fuses, that are present in the power path from the supply to the rig. Look for corrosion anywhere you see a voltage drop exceeding 0.1 - 0.2 v. then check again after you have replaced or cleaned contacts. Personally, I continuously monitor the voltage at the rig itself with an analog meter that flashes a red LED if the voltage at the rig drops below 12.2 v when under power. This was how I recently discovered that my storage battery had deteriorated past its useful life and needed replacement.

While we're on the subject: Keep your power cables as short as possible, use as large a conductor as possible (#10 at minimum) and don't over-fuse since the rig itself is usually fused. John VA7XB

Following is an edited version reprinted from icom7600@groups:

Re: Reduced Output Power

I just recently had this issue with my 7600's power being lower than it used to be. I cleaned every connection from the power supply to the rig with DeoxIT and burnished the contacts, too. The rig recovered to a full 100W, by its internal power display. The biggest improvement wasn't from the fuse holder, it was from the Powerpoles.

My power supply (Alinco DM-330) connects by about a foot of power wires, the same size as the radio's power, to a Rigrunner that distributes the 12V to other things that use it (I only have one radio on at a time). It plugs into the Rigrunner with Powerpoles, so there are two sets of power poles on wires and two sets they mate with in the Rigrunner.

My point is not to ignore the Powerpoles or any other connections you have.

I have a cheap little voltmeter on the 12V line, like this from Quicksilver Radio, and I can see the voltage on the Rigrunner dropping from 13.5 to 12.8V in transmit. The radio still makes 100W with that drop.

~ 73, Bob W4ATM

Fox Hunting & New ARDF Receivers

At our next General Meeting on Wednesday, March 11th, presenters will explain the radio sport of fox hunting. Les and Dave will also demonstrate the second generation of 80m receivers designed by Les, which will soon be available for purchase.

SOLDER SMOKE

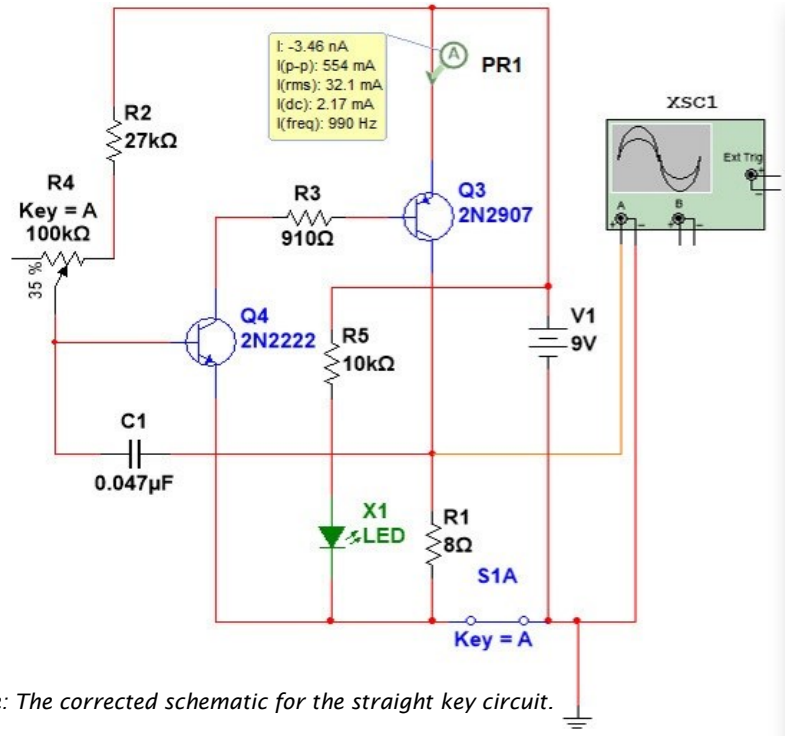
John Schouten VE7TI

3 Simple CW Practice Sets

Some of you are just completing our CW course and there has been some discussion about practice sets, as a matter of fact, some of you have already built one in kit form.

As a follow-up, here are three simple circuits, easily constructed, and the second is available by mail order as a complete kit. Any could be adapted to key a transceiver.

First: A straight key practice set



Above: The corrected schematic for the straight key circuit.

The Lake Washington Ham Club website provides instructions for a circuit that will work with a straight key.

The parts are easily obtained locally, and the information for putting it together is available at:

http://www.lakewashingtonhamclub.org/wp-content/uploads/2013/10/Electronic-Morse-Code-Oscillator-Kit-v3b.pdf

Note that the LED in their original circuit was reversed and the current limiting resistor value was too low. Thanks Daniel VE7LCG for pointing out that error and for the updated schematic.

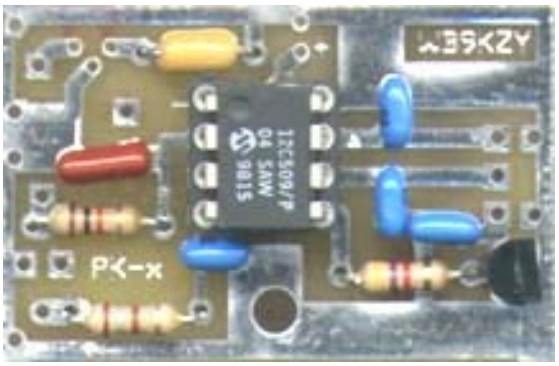
Second: A practice set for use with a paddle or straight key

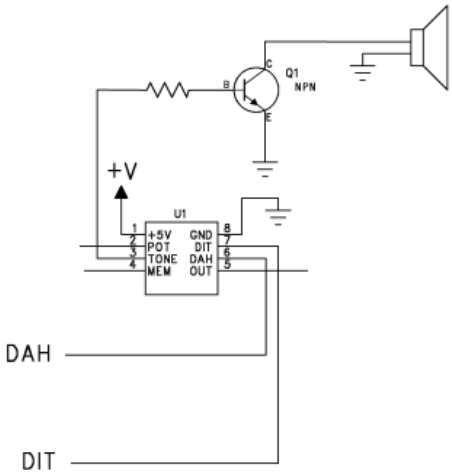
Alternatively, Les VA7OM brought a kit to the February SARC general meeting that functions like a paddle, the method preferred by accomplished CW operators. Using his build method, the circuit is established by cutting grooves into solid copper-clad circuit board stock to make the individual traces and solder pads.

Although Les only ordered the programmed PIC microcontroller chip and made the board and paddle himself, a kit, with a screened circuit board *[next page]*, is also available.

The PK-Basic is a Morse code iambic keyer which offers:

- Selectable straight or paddle operation;
- mode A or B Iambic keying;





Above L>R: The kit, Les' build and the schematic

- the circuit board;
- pot or paddle speed control, 5 to 39 WPM;
- 16 character memory + 13 character callsign memory;
- pin compatible with Tick or K8 keyer chips;
- beacon mode;
- one touch CQ using callsign memory;
- machine pin socket for keyer chip included with kit;
- speed readout - sends code speed via the sidetone;
- low standby power (about 1 µA at 5 V);
- low active power (1.5 ma max. at 5 V);
- small size (1 by 1.5 inches);
- Kit price (no printed manual) is US$13.00 + shipping/handling
- PK-Basic chip - price (no printed manual) is $3.50 + shipping/handling

Basic Kit:
http://wb9kzy.com/pkbasic.htm

Schematic:

http://wb9kzy.com/pkbasic.pdf

Manual:

http://wb9kzy.com/pkbasic3.pdf

And Finally: A Flashback To Last Year For Yet Another Keyer Project

Last, but not least, Daniel Romila VE7LCG submitted an article in the May 2019 Communicator (which has several CW articles) for an Analog CW Keyer. While the schematic works as published, Daniel recommends replacing the two capacitors 0.47 microF from his schematic with 4.7 microF, for easier adjustment in the most used speed settings.

Daniel described it as one of the most rewarding CW keyers he has made with bipolar transistors. It fulfills the following conditions:

- The ratio between dots and dashes to be 1:3 at all speeds.
- When you push the paddle, the transmission starts immediately.
- If releasing the paddle before the dot or dash is finished, the CW keyer continues that transmission until the end of the dot or dash, correcting a hand timing mistake.
- There is no influence from any contact resistance in the paddle.

Sometime in the 1970's he found a schematic built with transistors that fulfilled the above conditions. It is commonly found on the Internet and he cannot pinpoint the original author.

The original circuit is at: http://www.seekic.com/circuit_diagram/Control_Circuit/Simple_Electronic_Keyer.html

The re-worked and updated schematic was drawn and operationally tested by Daniel. It uses common off-the-shelf components. Have a look, it is not a difficult project and produces a keyer that fulfills his conditions.

In The News…

LED Street Light Replacement

Will we soon have more RFI noise to deal with?

Our local electrical supplier, BC Hydro, says it may begin installing thousands of light emitting diode (LED) street lights across the province this summer.

The utility currently owns and maintains approximately 95,000 streetlights around the province, roughly 30 per cent of all streetlights in British Columbia. Most of the ones attached to BC Hydro's electricity poles are high pressure sodium (HPS) lights.

Hydro says: "LED lights are known to last longer, are brighter and render colours significantly better than HPS lights."

The transition to the energy-saving technology could lead to cost savings of 50 to 70 per cent for the smaller communities who rely on the utility's public lighting, according to the Union of B.C. Municipalities (UBCM).

As taxpayers we're certainly in favour of lower costs but, you have only to run a Google search to learn that, in other areas, Amateurs have expressed concern that these lights may contribute to an increase in RF interference across the spectrum., specifically in the HF bands (below 30 MHz).

In some cases this is apparently due to inadequate shielding, poor quality, or lack of components to reduce noise, but it is generally agreed that the electronic power supplies in LED street lights can be the culprit.

Here are some of the story links:

- CBC News
- NBC Philadelphia
- ABC News Toledo, OH

RAC, are you monitoring this?

Shortly after this story appeared on our blog page, Keith Whitney VE7KW, RAC Director BC & Yukon, responded. It shows that RAC has taken notice:

I appreciate your concern, but would like to make a couple of points.

- RAC monitors this through the RABC (Radio Advisory Board of Canada) EMC Committee.
- The relevant regulation is ICES-005 Lighting Equipment last updated in December 2018 which sets limits on conducted (HF) and radiated (VHF) emissions. Note the LED limits are lower than the Gas Discharge (Sodium light) limits.
- Section 4(3) of the Radio Communications Act states that

  "No person shall manufacture, import, distribute, lease, offer for sale or sell any radio apparatus, interference-causing equipment or radio-sensitive equipment for which technical standards have been established under paragraph 6(1)(a), unless the apparatus or equipment complies with those standards."

It is to be assumed that a public utility would be compliant.

My personal experience indicates this is not a major problem.

- I follow the RSGB EMC reports and am not aware that approved LED lighting has been identified as a problem.
- I do a lot of contesting from VE7SCC which uses LED lighting almost exclusively in the shack and monitors for noise with an SDR. The site (Riverview Hospital) changed over to LED street lights about 18 months ago with no noticeable noise increase.
- I have just come from V3T (Belize) where the 80 through 15m noise levels were some of the lowest I have seen despite the entire resort using LED lighting as well as the Town we overlooked using LED street lamps.

Nothing in the field of EMC is guaranteed and this will merit ongoing monitoring. I would encourage people with access to an SDR to take a wide band "reference noise spectrum" now for comparison later. It would be particularly useful if they turn off their house power to prove that the noise source(s) are external.

~ 73 Keith VE7KW
RAC Director BC and Yukon

ITU Highlights Role Of Amateur Radio In Emergency Comms

Amateur radio features in the ITU Guidelines for national emergency telecommunication plans, published by the Telecommunication Development Sector (ITU-D)

The ITU Guidelines for national emergency telecommunication plan's pages 80-81 note:

Radio amateurs have supported communications in emergency situations on a voluntary basis since the beginning of radio communications. They are experts in radio communications and have the equipment, skills and necessary frequencies allocated by ITU (2017d) to deploy networks in emergency events quickly and efficiently.

The support provided by radio amateurs in cases of emergency has the following advantages:

- There is great coverage, due to the large number of amateur radio stations available and operating in all regions and in almost every country in the world.
- The coverage of amateur radio stations becomes a network independent of others.
- There are training programmes and simulation exercises for emergencies developed by national radio amateurs for situations of telecommunications in emergencies.
- They are qualified temporary volunteers who provide skills and experience essential for emergency telecommunications, with the sole purpose of supporting humanitarian aid services.
- They have skill in solving problems related to the use of telecommunications during emergencies with often very limited resources.
- Many amateur radio stations trained to handle emergency telecommunications have alternative power sources, such as battery power, solar power or generator power and can operate during power disruptions.

Read the PDF document ITU Guidelines for national emergency telecommunication plans at

https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Publications/Guidelines-for-NETPs.aspx

~ ITU

In amateur radio, QRP operation refers to transmitting at reduced power while attempting to maximize one's effective range. QRP operation is a specialized pursuit within the hobby that was first popularized in the early 1920s. QRP operators generally limit their transmitted RF output power to 5 watts or less for CW operation and 10 watts or less for SSB operation. Reliable two-way communication at such low power levels can be challenging due to changing radio propagation and the difficulty of receiving the relatively weak transmitted signals. QRP enthusiasts may employ optimized antenna systems, enhanced operating skills, and a variety of special modes, in order to maximize their ability to make and maintain radio contact. Since the late 1960s, commercial transceivers specially designed for QRP operation have evolved from vacuum tube to solid state technology. A number of organizations dedicated to QRP operation exist, and aficionados participate in various contests designed to test their skill in making long distance contacts at low power levels.

KB6NU's Column

Dan Romanchik, KB6NU

Slowing down nets QSOs, 80m afternoon propagation, "Adelante"

When he's not trying to figure out which way current flows, Dan blogs about amateur radio at KB6NU.com, teaches ham radio classes, and operates CW on the HF bands. Look for him on 30m, 40m, and 80m. You can email him at cwgeek@kb6nu.com.

When I call CQ, I generally set my CW speed between 21 and 25 wpm. If I don't get a bite at that speed, I start cranking it down. Often, at a slower speed, I'll finally get a reply. I'm always surprised at this, as I will gladly slow down for anyone answering my CQ. So, if you hear me calling, no matter what speed I'm sending at, please give me a call at what ever speed you're comfortable with. I want to talk to you more than I want to have a high-speed QSO.

On a related note, I'll often find someone calling CQ very close to my frequency, but at a slower speed. This happened to me just the other night. I cranked down my speed and replied to them, and we had a nice QSO. I wish they had just called me in the first place.

Late-morning 80m propagation

We're often taught that 80m is not an appropriate band to use during the day. There are even two questions in the General Class question pool that cover this:

QUESTION: Which ionospheric layer is the most absorbent of long skip signals during daylight hours on frequencies below 10 MHz? (G3C11)

ANSWER: The D layer

QUESTION: Why is long-distance communication on the 40-meter, 60-meter, 80-meter, and 160-meter bands more difficult during the day? (G3C05)

ANSWER: The D layer absorbs signals at these frequencies during daylight hour

Well, a couple of days ago, I wandered down to the shack late in the morning, and turned on the radio. The radio was set to 80m, as I had been operating that band the night before. Lo and behold, W9KY was calling CQ on the exact frequency. I answered him, and we had a nice QSO.

It wasn't much DX—QRZ.Com says W9KY is 217 miles away—but I was surprised that we were able to have such a nice QSO during the late morning hours. I guess that from now on, I'll have a look around 80m should my radio come up on that band after turning it on, no matter what time of day it is.

¡Adelante!

This belongs in the "you learn something new every day" file. The other night I was listening to phone QSOs on 40m, and for some reason, there seemed to be a lot of Spanish-languages conversations going on. Since I know a little Spanish, I decided to listen in on one of them.

At the end of their transmissions, the operators would say, "¡Adelante!" In my mind, that always meant something like, "Come on. Let's go!" or something similar. One of the definitions on Merriam Webster's Spanish Central website is, "come in!" So, I guess this makes sense.

~ Dan KB6NU

Why Marconi's Genius Was On A Different Wavelength

The UK's Daily Gazette reports this June will mark exactly 100 years since the world's first public broadcast took place in Chelmsford, Essex

The newspaper says:

"It was June 15, 1920, when Australian opera star Dame Nellie Melba sung down a microphone at the Marconi works in New Street.

She belted out two arias in her famous trill. By the time of her second broadcast a few days later, the great diva's warbles were being listened to across Britain, and as far away as New York.

Italian physicist and radio pioneer Guglielmo Marconi was used to being a leader in his field.

In December 1901 he had succeeded in sending the first radio transmission across the Atlantic Ocean, disproving detractors who told him that the curvature of the earth would limit transmission to 200 miles or less."

Read the full story at

https://www.gazette-news.co.uk/news/18230675.marconis-genius-different-wavelength/

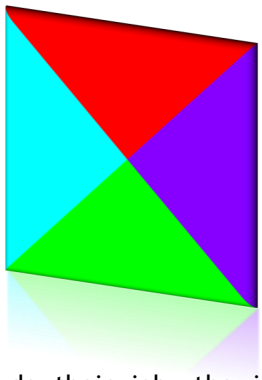
~ Southgate Amateur Radio

Marconi was also an entrepreneur, businessman, and founder of The Wireless Telegraph & Signal Company in the United Kingdom in 1897 (which became the Marconi Company). He succeeded in making an engineering and commercial success of radio by innovating and building on the work of previous experimenters and physicists.

Foundations Of Amateur Radio

Onno Benschop VK6FLAB

How I Care For My Connectors



For the audio podcast Foundations of Amateur Radio visit the website: http://podcasts.itmaze.com.au/

If you've ever found yourself in the position of attempting to screw a PL259 into an SO239, or an N-type plug into an N-type socket you'll have likely come across the situation where the thread doesn't quite fit. If it does, you might have issues attempting to undo the connection, even if you didn't particularly do anything strenuous in relation to mating the two in the first place.

This kind of situation happens to me more than I think is reasonable. It happens on cheap connectors, on expensive ones, on the back of radio gear, on adaptors, patch leads and the like.

Initially I put this down to cheap vs. expensive, but that really doesn't add up if you're attempting to connect an expensive plug into an expensive radio.

If you're into machining you'll know about swarf. If not, think metallic dust. Of course it doesn't have to be metallic, it could be a single grain of sand, or it could be a slightly damaged thread.

A couple of months ago I went on the hunt for a tap and die set that would solve this issue once and for all. If you're not familiar with the terms, a tap is like a long bolt with a square head and a die is like a thick washer with holes cut out.

In addition to being hardened, they each have cutting edges, which allows these two tools to do their job, the job of cutting threads.

Normally you'd use a tap to make a thread into a hole that you've drilled. You'd use a die to make a thread onto a rod that you have. There's lots of technique associated with this, cutting fluids, alignment, pressure and the like. Plenty of relaxing YouTube videos around - which is how I came upon this idea in the first place.

You can also use a tap or a die to cut across an existing thread and you can do this with connectors.

A die, threaded over a socket, will clean up the socket threads. Similarly a tap screwed into a plug will clean up the plug thread. There's a disclaimer coming for that last point, but stick around.

Trying to find a tap and die to match can be a challenge. The PL259, SO239 and N-type connectors are all 5/8th size threads. They're 24 turns per inch, and also known as UNEF (Uniform November Echo Foxtrot) threads, or Unified Extra Fine.

So if you start on your hunt, you'll be looking for 5/8th, 24 TPI, UNEF taps and dies.

I found mine online at $15 or so from a US supplier. Got to me in about a week.

When they arrived I immediately set about cleaning up all my sockets. This

To listen to the podcast, visit the website: http://podcasts.itmaze.com.au/

foundations/ and scroll to the bottom for the latest episode. You can also use your podcast tool of choice and search for my callsign, VK6FLAB.

All podcast transcripts are collated and edited in an annual volume which you can find by searching for my callsign on your local Amazon store, or visit my author page: http://amazon.com/author/owh.

Foundations of Amateur Radio Volume 7 is out now - with chapters on digital modes, coax connector loss, waterfalls, station performance and more.

Feel free to get in touch directly via email: onno@itmaze.com.au, or follow on twitter: @vk6flab (http://twitter.com/vk6flab/)

If you'd like to join a weekly net for new and returning amateurs, check out the details at http://ftroop.vk6.net, the net runs every week on Saturday, from 00:00 to 01:00 UTC on Echolink, IRLP, AllStar Link and 2m FM via various repeaters.

ITmaze -ABN: 56 178 057 063

phone: 04 1219 8888
onno@itmaze.com.au

was amazing, all of a sudden stuff started fitting well. Unfortunately I couldn't use the tap. The centre hole in a standard tap isn't big enough for the pin of a PL259, let alone an N-type connector, but a friend of a friend has access to machine tools and made the centre hole bigger. Word of warning, this is hardened steel. A hand-drill won't cut it.

I must mention that this won't allow you to use the tap inside an N-type plug, but you can use a die on the socket.

I'll also point out that if you need to use a tap wrench or a die holder, you're doing it wrong. We're cleaning up the thread, not making a new one. If you need extra force the most likely scenario is that you've cross threaded the tool onto the connector.

Of course if you've got a completely stuffed connector thread, then these tools can help, but you might want to consider replacing the connector.

My tap and die live in my go-kit right next to the coax adaptors. On my next field-day I won't be having to deal with poor connections, nor will I have to worry about unscrewing them after the event.

A tap and die, great simple tools to fix a recurring issue.

~ I'm Onno VK6FLAB

"Is This Frequency In Use?"

And Other Lies We Tell Ourselves

When you switch your radio on to start a radio fishing expedition you join all the other spectrum users across the planet. To be fair, you'll likely only become aware of some of those for the time that your radio is switched on, even if there are thousands around.

One of the ways you can find other users is by ditting out "QRL?" in Morse or saying "Is this frequency in use?" into your microphone.

This simple courtesy of checking to see if the frequency you're on is actually being used by someone, is part of your license. You're taught to do this and it's expected.

What's not clear is what happens next.

It's simple if you hear a callsign, or a "yes", but what if you hear nothing?

Sometimes nothing means exactly that, there's nobody on the frequency, but that's not always the case. There's plenty of opportunity for the frequency to be in use and you still not getting a response back.

Let's imagine for a moment that the frequency you're on is in use by two stations talking to each other. You come on frequency, hear nothing and ask if the frequency is in use. You hear nothing. You try again, still nothing.

You start calling CQ. Moments later, you get an earful from some random station.

Sound familiar? If it doesn't, you'll need to spend more time on-air. I can guarantee that you'll experience this in your amateur adventures, much more than once.

How does this happen? You did everything right.

Imagine two stations, let's call them Amanda VK4FRST and Marc VK3OHM, having a conversation, a QSO. They're discussing the ins-and outs of the WIA awards system and having a grand old time.

You turn your radio on, happen to tune to the same frequency as their QSO and after listening to nothing for a bit, you call "Is this frequency in use?". You still hear nothing so you try again: "Is this frequency in use? VK6FLAB". Still nothing. You call "Nothing heard." and start calling CQ.

You're on one side of the country, Amanda and Marc are on the other side. They cannot hear you and you cannot hear them. Then the sun moves a bit and all of a sudden your CQ is all over their discussion. Unhappy people on both sides of the country.

There are six paths to consider here. The one between you and Amanda, and the reverse. Similarly the path between you and Marc and that reverse. If you ask for frequency in-use, neither Amanda, nor Marc can hear you. Similarly, you cannot hear either Amanda or Marc. You should also take a moment to consider the path between Amanda and Marc and vice-versa. They might have a really great 5 and 9 conversation, or they might be struggling along with a 3 and 2.

I've simplified this, because of course, you calling over the top of a conversation can also disturb the contact under way. Saying that the frequency is in use makes it worse.

While all this is happening, the sun is moving, the ionosphere is moving, propagation is moving, the whole thing is like the Cat in the Hat balancing on a beach ball, complete with cake, rake and a fish still in its bowl.

The first thing you need to do when this happens is stop and take a breath. Nobody owns any frequency, so claiming that this is your frequency is not going to help anyone. If the other station is having a QSO and you're calling CQ, it's time for you to move, change frequency and QSY.

If you're Amanda or Marc, you can tell your contact that there is some interference and then call the other station that the frequency is in use. If they change frequency, all good, if they don't, tell your contact to change frequency.

There's no need for aggravation. There is no ownership. There's no point in getting upset and no mileage in making life hard for the other station. The fact of the matter is that there was what we call in networking, a collision. It's time to back off and renegotiate.

All this is exactly the same if you're using voice, Morse, FT8, or any other mode.

Take a breath, renegotiate, move on.

Now, if you're a QRP station like me, it's much more likely that you'll not be heard most of the time. In that case it's often much quicker to just to move without going through the negotiation process. Of course you can attempt to make a QRP contact with one of the other stations, but it's considered pretty rude to stick your head between two people who are having a cup of coffee together and ask them for their autograph, so don't do it on air either.

If you assume malice from the get-go, you'll find yourself unhappy most of the time. If you celebrate that all of a sudden there's propagation between VK6, VK4 and VK2 you'll end up much happier with your on-air experiences.

While I'm giving out advice, here's something I learnt during the week.

If you break a toe, tread carefully. Stubbing a broken toe hurts. Really. Badly. In case you're wondering, my new boot is not a fashion accessory.

~ I'm Onno VK6FLAB

No-Ham Recipes

Barbara Goodier VE3KKY

Tabbouleh

Tabbouleh is a traditional Middle Eastern dish that originated in Syria and Lebanon, and slight variations exist in different countries. Extra-virgin olive oil is the oil most commonly used, a chopped black olives are sometimes added.

- 1/2 cup (125 ml) bulgur wheat
- 1/2 cup (125 ml) hot water
- 1/3 cup (90 ml) olive oil or vegetable oil
- 1/4 cup (65 ml) lemon juice
- 1 1/2 teaspoons (7.5 ml) salt
- 1 teaspoon (5 ml) allspice
- 1 bunch green onions
- 1 bunch flat-leafed parsley (not Italian curled-leaf)
- 1 head romaine lettuce
- 2 tomatoes
- 1/3 cup (90 ml) lightly packed fresh mint leaves (optional)

Soak bulgur in water for 20 minutes. Add and mix with lemon juice, salt and allspice. Cut green onions and tops into 1 inch (2.5 cm) pieces. Using the metal blade, process onions and mint leaves until finely chopped. Add to bulgur.

Process parsley until finely chopped, add to bulgur. Slice tomatoes in 1/4 inch (.64 cm) cubes, add to bulgur and mix lightly. Cover and chill for at least 1 hour. To eat tabbouleh, tear off a piece of romaine and use it to scoop up each bite. Can be used on its own without romaine.

Makes 6 to 8 servings

Social Reminder

The Surrey weekly social gathering is on Saturday at the Kalmar Restaurant at 80th and King George Boulevard between 7:30 and 9:30 am. You don't have to be a SARC member to participate. Bring your significant other, bring your family, see old friends and have fun.

A 'Back To Basics' Rectification

A Clarification of Emergency vs Distress

In the last Communicator issue, the 'Back To Basics' column looked at emergency operations and distress calls. After the issue appeared, there was an exchange of email with ISED (formerly Industry Canada) , that corrected an important distinction between emergency and distress operation with Amateur radio.

The issue turned out to be a misprint in the official Basic Question Bank. ISED has now issued an updated version of the Question Bank and corrected the error. So that there is no misunderstanding, a portion of the corrected column, with an explanation, is reprinted here. The original article and references were also updated.

Emergency Traffic

Emergency traffic refers to radio transmissions involving imminent danger to a person or persons. It does not generally include property, however that distinction is sometimes clouded by the opinion of the person reporting the emergency.

Let us first suppose you hear a reported Mayday or SOS transmission. If you hear an emergency call for help on your frequency, immediately stop if you are in a contact and take the emergency call. If hearing a station in distress, break in if other Amateurs are using the frequency, as they may not have heard the call. Determine the call's location and what assistance may be needed, then contact the appropriate authority to relay the information.

In an *emergency situation* you are restricted to operate within the terms of your licence however, in a *distress situation* you may exceed these restrictions.

Section 48 of *The Radiocommunication Regulations*, made under the *Radiocommunication Act*, states the following:

Emergency Communications

48. In a real or simulated emergency, a person operating radio apparatus in the amateur radio service may only communicate with a radio station that is in the amateur radio service in order to transmit a message that relates to the real or simulated emergency on behalf of a person, government or relief organization.

Even in the case of an emergency situation, an amateur radio station is only allowed to communicate with another amateur radio station. Also amateur radio stations must follow the technical requirements set out in *RBR4 – Standards for the Operation of Radio Stations in the Amateur Radio Service* at all times. There are no exceptions to power and band limitations as set out in this document.

Although there is no explicit exception made to this within the regulations, if an amateur station is in distress, it is acceptable for that station to use ***any*** means of radiocommunication at its disposal. A station in distress should not be concerned with power or band limitations or any other restrictions. This is the take away from questions B-001-011-005 and B-001-011-007 in *RIC-7 The Amateur Radio Basic Question Bank*.

In emergency communications It is important that amateur operators consider whether to make a distress call or if it is an urgency that doesn't require immediate attention. The benefit of the doubt should be with the station making a distress call.

Also worth noting is that simply because it is acceptable to exceed the restrictions in a case of distress, it should not be used as justification for not meeting the standards in RBR-4 or any other restrictions in regular operations of an amateur station. For example, in section 10 of the RBR-4 it says *"The transmitting power of an amplifier installed at an amateur station shall not be capable of exceeding by more than 3 dB the transmitting power limits described in this section"*.

[The foregoing as per Kasun Somaratna, Spectrum Management Officer, Spectrum Management Operations Branch – ISED Canada

Please note the distinction made by Industry Canada between Emergency and Distress operation.

Not all emergencies are distress situations, however that is a fine line open to individual interpretation. That leaves the quandary of "Can I legally exceed my licence restrictions or not"? One would hope that the benefit of doubt would be with the Amateur in distress or responding in an emergency.

~ John VE7TI

RAC News

RAC Amateur Of The Year Award

The RAC Board of Directors takes great pleasure in selecting Cary Rubenfeld, VE4EA, as the recipient of the RAC Amateur of the Year Award for 2019 in recognition of his tireless efforts to promote Amateur Radio in his home province of Manitoba, throughout Canada and internationally.

Through the RAC Amateur of the Year Award, Radio Amateurs of Canada recognizes the outstanding contributions made by Canadian Amateurs. The RAC Board considers nominations for the RAC Amateur of the Year Award and presents it if and when the nomination demonstrates the exceptional contribution made. If there are several nominations the best for that year is approved.

New RAC bulletin logo November 2019Cary is a founding member of Radiosport Manitoba (RSM) which combines his passion for contesting and DX. Since its inception in 2013, he has served as its Vice-President and Education Coordinator and has recruited renowned guest speakers to present world class presentations remotely to the group.

He was the driving force behind the organization and presentation of "The HF Experience" in 2016, which was an event targeted towards new and old Amateurs that provided a wide array of topics meant to encourage and entice participants to explore the HF bands.

Cary is a long-time member of the Winnipeg Amateur Radio Club (WARC) and has organized and led their annual Field Day events for the past several years. He realized that Field Day has often been many Amateurs first opportunity to get on the air and especially on HF. He has seized these opportunities to create a Field Day that encourages HF operation for those with little or no experience. To assist in this, he has successfully recruited top contesters from Alberta, Ontario and the United States to join the local contesters to act as mentors.

Cary has become the face of VE4 on the international scene. A regular attendee at Dayton and a guest at the last World Radiosport Team Championship (WRTC) event in Germany, he mingles and establishes a personal relationship with Amateurs from around the world. He was also a participant in the VE100VIMY special event in 2017.

In addition to his other volunteer efforts with the Winnipeg ARC, Cary has been instrumental in bringing new life and ideas to the club by seeking out new Amateurs and mentoring them along the path to become proficient operators. In 2019, Cary successfully spearheaded the effort to activate VE4WARC to commemorate the 100th Anniversary of the Winnipeg Amateur Radio Club.

Stay tuned to the RAC website for additional information about the presentation of the award once the plans have been finalized. For more information about the RAC Amateur of the Year Award visit: https://wp.rac.ca/rac-amateur-of-the-year/

~ Glenn MacDonell, VE3XRA
RAC President and Chair

Back to Basics

John Schouten VE7TI

From The Canadian Basic Question Bank

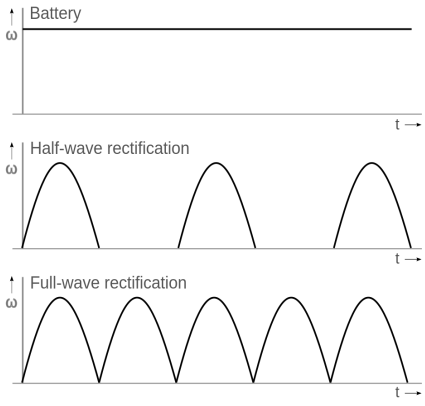
The Current War: AC vs DC

Back to some real basics in this edition… Direct and Alternating Current. The Basic Question Bank does not ask about AC or DC directly however, there are several dozen questions that ask about the effects of AC and DC in circuits and components. This article should provide you with the basics.

DC

Direct current (DC) is the unidirectional flow of an electric charge. An electrochemical cell is a prime example of DC power. DC may flow through a conductor such as a wire, but can also flow through semiconductors, insulators, or even through a vacuum as in electron or ion beams. The electric current flows in a constant direction, distinguishing it from alternating current (AC). A term formerly used for this type of current was galvanic current.

The abbreviations AC and DC are often used to mean simply alternating and direct, as when they modify current or voltage.



Types of Direct Current

DC has many uses, from the charging of batteries to large power supplies for electronic systems, motors, and more. Very large quantities of electrical energy provided via DC are used in smelting of aluminum and other electrochemical processes. It is also used for some railways, especially in urban areas.

DC was produced in 1800 by Italian physicist Alessandro Volta's battery, his Voltaic pile. The nature of how current flowed was not yet understood. French physicist André-Marie Ampère conjectured that current travelled in one direction from positive to negative. When French instrument maker Hippolyte Pixii built the first dynamo electric generator in 1832, he found that as the magnet used passed the loops of wire each half turn, it caused the flow of electricity to reverse, generating an AC. At Ampère's suggestion, Pixii later added a commutator, a type of "switch" where contacts on the shaft work with "brush" contacts to produce DC.

The late 1870s and early 1880s saw electricity starting to be generated at power stations. These were initially set up to power arc lighting (a popular type of street lighting) running on very high voltage (usually higher than 3000 volt) DC or AC. This was followed by the wide spread use of low voltage DC for indoor electric lighting in business and homes after inventor Thomas Edison launched his incandescent bulb based electric "utility" in 1882.

DC was replaced over the next few decades by AC in power delivery. In the mid-1950s, high-voltage DC transmission was developed, and is now an option instead of long-distance high voltage AC systems. For long distance underseas cables (e.g. between countries, such as NorNed), this DC option is the only technically feasible option. For applications requiring DC, such as third rail power systems, AC is distributed to a substation, which utilizes a rectifier to convert the power to DC.

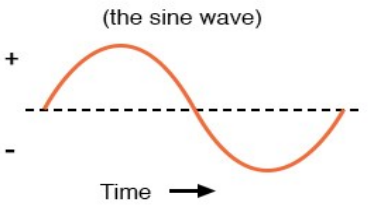
AC

AC is an electric current which periodically reverses direction, in contrast to DC which flows only in one direction. AC is the form in which electric power is

delivered to businesses and residences, and it is the form of electrical energy that consumers typically use when they plug kitchen appliances, televisions, fans and electric lamps into a wall socket. A common source of DC power is a battery cell in a flashlight.

The usual waveform of AC in most electric power circuits is a sine wave, whose positive half-period corresponds with positive direction of the current and vice versa. In certain applications, like guitar amplifiers, different waveforms are used, such as triangular or square waves. Audio and radio signals are also examples of AC. These types of AC carry information such as sound (audio) or images (video) sometimes carried by modulation of an AC carrier signal. These currents alternate at higher frequencies than those used in power transmission.

Electrical energy is distributed as AC because AC voltage may be increased or decreased with a transformer. This allows the power to be transmitted through power lines efficiently at high voltage, which reduces the energy lost as heat due to resistance of the wire, and transformed to a lower, safer, voltage for use. Use of a higher voltage leads to significantly more efficient transmission of power.



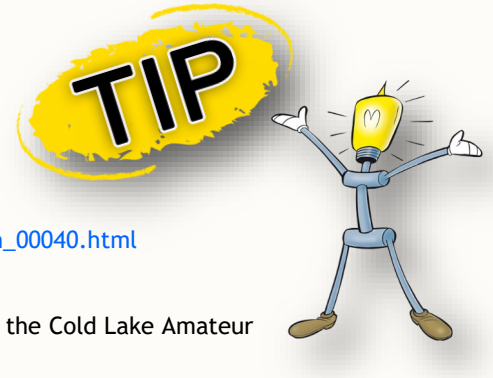
Alternating Current

The frequency of the electrical system varies by country and sometimes within a country; most electric power is generated at either 50 or 60 Hertz. Some countries have a mixture of 50 Hz and 60 Hz supplies, notably electricity power transmission in Japan. A low frequency eases the design of electric motors, particularly for hoisting, crushing and rolling applications, and commutator-type traction motors for applications such as railways. However, low frequency also causes noticeable flicker in arc lamps and incandescent light bulbs. The use of lower frequencies also provided the advantage of lower impedance losses, which are proportional to frequency.

Storage and Conversion From AC to DC and Vice Versa

DC may be converted from an AC supply by use of a rectifier (diodes), which contains electronic elements (usually) or electro-mechanical elements (historically) that allow current to flow only in one direction. A common example is the adapter that you might use to power the battery on your laptop. DC can be "bumped" up or down, it is just a little more difficult and generally involve semi-conductor circuitry.

Study Links



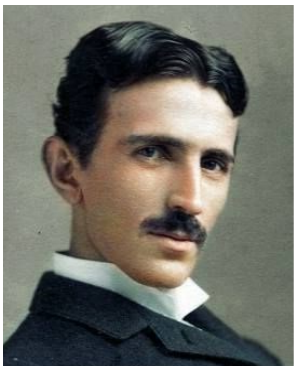
Whether you are new to the hobby or brushing up on skills, you should find these study links helpful:

1. RIC-7 is the entire up-to-date Industry Canada (IC) Basic Question Bank. http://tinyurl.com/CanadaBasicQB
2. There is a RIC-7 that has some explanations along with the questions. RIC-7 2014rev08.05 with explanations.
3. The Amateur Radio Exam Generator is at: https://www.ic.gc.ca/eic/site/025.nsf/eng/h_00040.html
4. The ExHaminer Study software for Windows is at: https://wp.rac.ca/exhaminer-v2-5/
5. There are plenty of good resources for both basic and advanced exam study courtesy of the Cold Lake Amateur Radio Society at: http://www.clares.ca/va6hal%20training.html

Contact SARC if you wish to write the Basic or Advanced Exam. If you pass we'll even give you a year's free SARC membership!

Newly Licensed? When you receive your paper license in the mail, it will come with a form that can be filled out and mailed to the Radio Amateurs of Canada office, at which point an introductory RAC one-year membership will be set up. Introductory memberships are identical to our existing basic memberships and you will receive The Canadian Amateur magazine for one year.

Inverters change DC to AC. For example, for your car, an inverter would change the 12 volt DC to 120 Volt AC to run a small device. While DC can be stored in batteries, you cannot store AC.

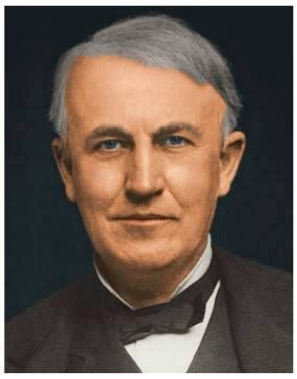


NIKOLA TESLA

The 'Current' War

Starting in the late 1880s, Thomas Edison and Nikola Tesla were embroiled in a battle now known as the War of the Currents.

Edison developed DC. During the early years of electricity, DC was the standard in the U.S. Tesla believed that AC was the solution to this problem. Edison, not wanting to lose the royalties he was earning from his DC patents, began a campaign to discredit AC. He spread misinformation saying that AC was more dangerous, even going so far as to publicly electrocute stray animals using AC to prove his point. Topsy, a circus elephant had killed several people. To make his point and demonstrate the danger of AC, Edison offered to electrocute the animal. Topsy was electrocuted at Luna Park Zoo on Coney Island in 1903, and captured on film by Edison.



THOMAS EDISON

	Alternating Current	Direct Current
Amount of energy that can be carried	Safe to transfer over longer city distances and can provide more power.	Voltage of DC cannot travel very far until it begins to lose energy.
Cause of the direction of flow of electrons	Rotating magnet along the wire.	Steady magnetism along the wire.
Frequency	The frequency of alternating current is 50Hz or 60Hz depending upon the country.	The frequency of direct current is always zero.
Direction	It reverses its direction while flowing in a circuit.	It flows in one direction in the circuit.
Current	It is the current of magnitude varying with time	It is the current of constant magnitude.
Flow of Electrons	Electrons keep switching directions - forward and backward.	Electrons move steadily in one direction or 'forward'.
Obtained from	A.C Generator and mains.	Cell or Battery.
Passive Parameters	Impedance.	Resistance only
Power Factor	Lies between 0 & 1.	it is always 1.
Types	Sinusoidal, Trapezoidal, Triangular, Square.	Pure and pulsating.

The event was one of a string of animal electrocutions Edison staged to discredit AC. The video of this bizarre experiment is on YouTube.

The Chicago World's Fair, also known as the World's Columbian Exposition, took place in 1893, at the height of the Current War. General Electric bid to electrify the fair using Edison's DC for $554,000, but lost to George Westinghouse, who said he could power the fair for only $399,000 using Tesla's AC.

That same year, the Niagara Falls Power Company decided to award Westinghouse, who had licensed Tesla's polyphase AC induction motor patent, the contract to generate power from Niagara Falls. Although some doubted that the falls could power all of Buffalo, New York, Tesla was convinced it could power not only Buffalo, but also the entire Eastern United States. On November 16, 1896, Buffalo was lit up by the AC from Niagara Falls. By this time General Electric had decided to jump on the AC train, too.

It would appear that AC had all but obliterated DC, but in recent years DC has seen a bit of a renaissance. Today our electricity is still predominantly powered by AC, but computers, LEDs, solar cells and electric vehicles all run on DC power. And methods are now available for converting DC to higher and lower voltages. Since DC is more stable, companies are finding ways of using high voltage DC (HVDC) to transport electricity long distances with less loss.

So it appears the War of the Currents may not be over yet. But instead of continuing in a heated AC vs. DC battle, it looks like the two currents will end up working parallel to each other in a sort of hybrid armistice. And none of that would be possible without the genius of both Tesla and Edison.

For more information on AC and DC, go to:

https://youtu.be/HqMqdFNWX4s

~ John VE7TI

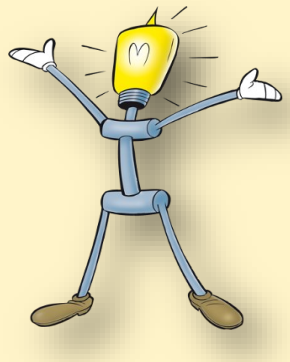
Painful Lesson On The Difference Between Electrical Currents (AC and DC)

Electro-Boom Current Wars:

(CBS News) When we last checked in on Mehdi Sadaghdar, he was demonstrating "Capacitors" and in quite a bit of pain. Come to think of it, the time before that, when he was demonstrating "Electrostatic Discharge" to us, he was also in a lot of pain. I wonder what might happen in his latest video above demonstrating the difference between the two major types of electrical currents? Another lesson you will never forget should "spark" your interest at about 1:10 into the video.

Go ahead and pat yourself on the back if you guessed he'd be in a whole lot of pain all over again. And now that every single one of you has patted yourself on the back, Mehdi Sadaghdar writes about his latest, painful lesson in electricity (that no one should ever try at home!):

"Have you always wondered if you electrocuted yourself, which type of electricity would hurt more: AC (Alternating Current) or DC (Direct Current)? Wait no more!"



A big triple-rainbow salute of electrifying education goes out to Mehdi from all of us here for continuing to put himself through such pain for our ongoing education! And to check out more amusing lessons in science that you will never forget, you can see our previous posts on Mehdi Sadaghdar by clicking here or you can go to his YouTube page by clicking here.

Electro-Boom Current Wars: https://youtu.be/S7C5sSde9e4

March 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 CONTESTS: NA QSO Party (RTTY); SC, NC QSO Party (all modes)	2	3 1930 SEPAR Net 2000 SARC Net Basic Course	4	5	6	7 7:30-9:30 AM SARC Social: Kalmar Family Restaurant 8076 King George Blvd, Surrey, BC CONTEST: ARRL Int'l DX (SSB)
8 CONTEST: ARRL Int'l DX (SSB)	9	10 1930 SEPAR Net 2000 SARC Net Basic Course	11 1900 SARC General Meeting	12	13	14 7:30-9:30 AM SARC Social: Kalmar Family Restaurant CONTESTS: RSGB Commonwealth (CW); WI, ID, OK QSO Party (all modes)
15 CONTESTS: RSGB Commonwealth (CW); WI, ID, OK QSO Party	16	17 1930 SEPAR Net 2000 SARC Net Basic Course	18	19	20	21 7:30-9:30 AM SARC Social: Kalmar Family Restaurant Antenna Workshop CONTESTS: BARTG RTTY; VA, LA QSO Party (all modes); Russian DX (CW & SSB)
22 CONTESTS: BARTG RTTY; VA, LA QSO Party (all modes); Russian DX (CW & SSB)	23	24 1930 SEPAR Net 2000 SARC Net Basic Course	25 1900 SARC Exec Meeting	26 1900 SEPAR Meeting	27	28 7:30-9:30 AM SARC Social: Kalmar Family Restaurant CONTEST: CQ WW WPX (SSB)
29 CONTEST: CQ WW WPX (SSB)	30	31 1930 SEPAR Net 2000 SARC Net Basic Course				

For details on all SARC events, go to ve7sar.net

For details on all SEPARS events, go to separ.shutterfly.com/calendar

Contest Details: http://hornucopia.com/contestcal/contestcal.html

April 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 CONTEST: Silent Key Night (see page 13)	2	3	4 7:30-9:30 AM SARC Social: Kalmar Family Restaurant 8076 King George Blvd, Surrey, BC CONTEST: MO, MS, LA QSO Party (all modes)
5 CONTEST: MO, MS, LA QSO Party (all modes)	6	7 1930 SEPAR Net 2000 SARC Net Basic Course	8 **1900 SARC General Meeting**	9	10 Good Friday	11 7:30-9:30 AM SARC Social: Kalmar Family Restaurant CONTEST: NM, ND, GA QSO Party (all modes)
12 Easter CONTEST: NM, ND, GA QSO Party (all modes)	13	14 1930 SEPAR Net 2000 SARC Net Basic Course	15	16	17	18 7:30-9:30 AM SARC Social: Kalmar Family Restaurant CONTEST: MI, ON QSO Party (all modes); CQMM DX (CW) **World Amateur Radio Day**
19 CONTEST: MI, ON QSO Party (all modes); CQMM DX (CW) ARRL Rookie RU (SSB)	20	21 1930 SEPAR Net 2000 SARC Net Basic Course Exam	22 **1900 SARC Exec Meeting**	23 **1900 SEPAR Meeting**	24	25 7:30-9:30 AM SARC Social: Kalmar Family Restaurant CONTEST: FL QSO Party (all modes)
26 CONTEST: FL QSO Party (all modes)	27	28 1930 SEPAR Net 2000 SARC Net	29	30		

Contest Details: http://hornucopia.com/contestcal/contestcal.html

CW Course Report

Kevin McQuiggin VE7ZD / KN7Q

-.-- .- -. ..- .- .-. -.-- -.... -- .- .-. -.-. .... ..--- ----- ..--- -----

SARC's first CW course in several years started on January 7th, 2020. Even without external advertising, the class filled up quickly and the first night saw us start with 22 **students.**

Enthusiasm was high. A few students already had their CW endorsements but wanted to attend the course to refurbish their CW skills as they had not been on the mode in many years, but the majority of students had no experience and were starting from scratch. Ages range from early teens to 83 years of age.

The course started with an introduction to the basic elements of CW, dots and dashes, and how these elements are combined to form letters, numbers and other symbols. Emphasis was placed on not learning symbols as "combinations of dots and dashes" but rather as *rhythms*, and the mental linkage of these rhythms to the associated letter or other symbol.

It is important when learning CW to first develop the mental pathways that link each symbol's rhythm with it in the brain. Repetition is key: writing the letters or numbers down comes later.

As such, students don't write letters down for the first few weeks but rather just vocalize each rhythm when they hear it. It makes for a loud class, but it is fun, and this method gets everyone's mental pathways *rhythm (letter, number, or punctuation mark)* linked properly!

We are using the "Farnsworth Method" for learning CW [1]. Rhythms (i.e. for letters, numbers, punctuation) are sent at a relatively high code speed, followed by a longer delay between rhythms, so that the equivalent "words per minute" (wpm) value is quite low. The space between individual symbols gives the learning brain time to think and map the rhythm to the correct symbol. Symbols are being sent at about 15 wpm, but with longer spacing between them the equivalent rate is about 5 wpm.

Using this approach makes building CW speed much easier, as to increase CW speed the rhythms of each symbol will remain *exactly the same* while just the *spacing between the rhythms* gets reduced. The Farnsworth method was used by Canada's armed forces during the time when CW was still used operationally. It is working quite well in our course.

The first week of class we covered the letters *A, E, I, L, M, N, O and T*. Textual drill files and audio files help the students study between classes. Many of the students are trying a number of different smartphone and computer apps that randomize characters. This is fine, but collectively we have learned that some of the programs are quite complicated and contain too many options and settings for the new learner. We will be able to rate these programs as to their usability and effectiveness at the end of this first course.

Week 2 added more letters to the mix, and the symbols for the numbers 0 through 9, plus some

punctuation. The remaining letters were added over the next couple of weeks.

Key in learning any new skill is practice, and students have been working very hard at home to firmly establish their *rhythm - symbol* linkages. About 30 minutes a day will do it.

The class moved from speaking the names of letters and numbers to writing them down in week 3, so we are well on the way to everyone being able to take the IC receiving test.

RIC-1 states that candidates must receive CW for three minutes and be able to reproduce the test sentence with a maximum of five mistakes. Candidates for the endorsement must also send CW for a period of three minutes. Sending is straightforward and much easier than receiving and will be a focal point of the two remaining class sessions.

At this writing, students have all the symbols they need for the Industry Canada examination and we are practicing during class by sending text from *QST* and other publications. Most people are on track for taking the examination in a couple of weeks. For those students who are learning a bit more slowly, we are going to extend the course by two or three weeks in order to ensure that, as far as possible, everyone makes the grade and obtains their CW endorsement.

Learning should be passed on. It is great fun working with everyone in the class, and it has given me a chance to pass on the excellent CW instruction that was given to me when I was but a teenager!

~ Kevin VE7ZD / KN7Q

References

[1] See https://en.wikipedia.org/wiki/Morse_code.

Kevin VE7ZD brought his cockatiel Dwight to a recent CW class. Apparently he (Dwight) is also a CW fan and perks up whenever Kevin keys up.

He's not a talker, but if he was he'd probably say:

" da-di-da-dit da-da-di-dah"

The Contest Contender

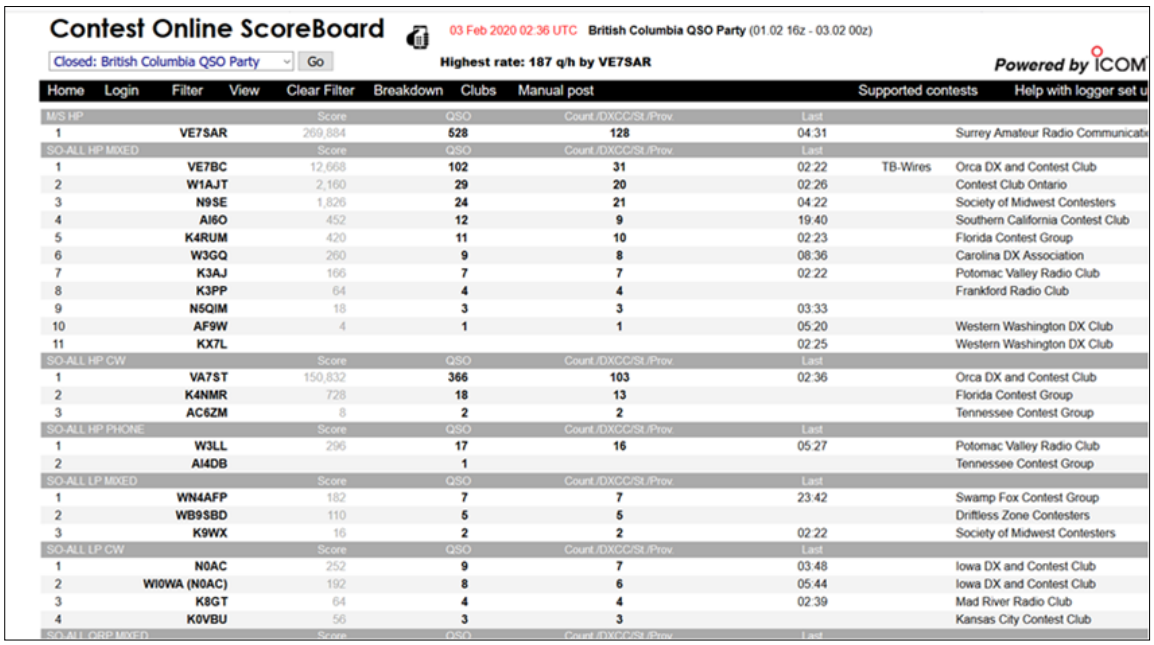
BC QSO Party

John Brodie VA7XB

Jan VA7VJ, Les VA7OM and John VA7XB made the decision that this time, in contrast to previous BCQP contests when member participation was really our only objective, we were actually going to seriously compete in the BC QSO Party as a CW-only entry. That we did, proving that high scores are possible even when most of the BCQP competitors are on SSB.

This contest ran from 8 am to 8 pm on Saturday and 8 am to 4 pm on Sunday, the first weekend in February. There is a whole slew of other contests activity at the same time, so while it ensures a good turnout of stations on the air, it can make for some confusion. First out of the gate both mornings was the FOC contest, which pits expert CW operators against each other; however they only want to work other FOC members so we avoided them. Then, at overlapping times with the BCQP, were the Vermont QP, the Minnesota QP, the FYBO contest and the NA CW Sprint and a couple of others. The exchanges for these contests are all different and though it is possible to gain contacts from other contesters, it complicates the process.

We found the most productive way to score points was to RUN, i.e. call CQ and have the other stations come to us. Most of them seemed to know that all we needed was an RST and State for the exchange. They also knew to ask for other information from us if it was not provided for their particular contest. We had set up some function keys in advance to provide the proper exchange for these contests to minimize time-consuming asking and responding.



Contest Online ScoreBoard

03 Feb 2020 02:36 UTC **British Columbia QSO Party** (01.02 16z - 03.02 00z)

Closed: British Columbia QSO Party — Go

Highest rate: 187 q/h by VE7SAR

Powered by ICOM

Home	Login	Filter	View	Clear Filter	Breakdown	Clubs	Manual post		Supported contests	Help with logger set u
M/S HP				Score	QSO		Count./DXCC/St./Prov.	Last		
1		VE7SAR		269,884	528		128	04:31		Surrey Amateur Radio Communicati
SO-ALL HP MIXED				Score	QSO		Count./DXCC/St./Prov.	Last		
1		VE7BC		12,668	102		31	02:22	TB-Wires	Orca DX and Contest Club
2		W1AJT		2,160	29		20	02:26		Contest Club Ontario
3		N9SE		1,826	24		21	04:22		Society of Midwest Contesters
4		AI6O		452	12		9	19:40		Southern California Contest Club
5		K4RUM		420	11		10	02:23		Florida Contest Group
6		W3GQ		260	9		8	08:36		Carolina DX Association
7		K3AJ		166	7		7	02:22		Potomac Valley Radio Club
8		K3PP		64	4		4			Frankford Radio Club
9		N5QIM		18	3		3	03:33		
10		AF9W		4	1		1	05:20		Western Washington DX Club
11		KX7L						02:25		Western Washington DX Club
SO-ALL HP CW				Score	QSO		Count./DXCC/St./Prov.	Last		
1		VA7ST		150,832	366		103	02:36		Orca DX and Contest Club
2		K4NMR		728	18		13			Florida Contest Group
3		AC6ZM		8	2		2			Tennessee Contest Group
SO-ALL HP PHONE				Score	QSO		Count./DXCC/St./Prov.	Last		
1		W3LL		296	17		16	05:27		Potomac Valley Radio Club
2		AI4DB			1					Tennessee Contest Group
SO-ALL LP MIXED				Score	QSO		Count./DXCC/St./Prov.	Last		
1		WN4AFP		182	7		7	23:42		Swamp Fox Contest Group
2		WB9SBD		110	5		5			Driftless Zone Contesters
3		K9WX		16	2		2	02:22		Society of Midwest Contesters
SO-ALL LP CW				Score	QSO		Count./DXCC/St./Prov.	Last		
1		N0AC		252	9		7	03:48		Iowa DX and Contest Club
2		WI0WA (N0AC)		192	8		6	05:44		Iowa DX and Contest Club
3		K8GT		64	4		4	02:39		Mad River Radio Club
4		K0VBU		56	3		3			Kansas City Contest Club
SO-ALL QRP MIXED				Score	QSO		Count./DXCC/St./Prov.	Last		

Saturday was quite busy, but activity dramatically slowed down on Sunday (contest fatigue?). By the end, we were making only one contact every 10 minutes. Part way through Jan's shift, the computer froze up in the middle of a contact, and had to be rebooted to get started again. The culprit was an impromptu and unasked-for Windows update. Grrrr.

What was interesting was that several weak European stations responded to our call. These were always at the wrong azimuth and had to be brought in with the beam and careful listening to make copy. However, we were happy to have them.

One disappointment was the paucity of VE7 stations which, of course, are the most sought after quarry as they yield bonus points. However, to make up for that we had lots of welcome activity from US and eastern Canadian stations who took the trouble to look up the proper exchange and offer it without being asked even though probably not competing in our contest. We managed to find VA7ODX on all the bands to gain special bonus points. 15 m, as usual, was slim pickings and 10 m was dead.

So, once again the combination of an IC-7600, SteppIR beam for 10-40m, 80 m L-vertical, and SARC's borrowed kw Expert Linear did the job expected without problem. Here are the statistics:

Band	QSOs	Pts	Mul	Mt2	Pt/Q
3.5	20	80	13	1	4.0
7	91	364	45	1	4.0
14	429	1716	63	1	4.0
21	4	16	3	1	4.0
Total	544	2176	124	4	4.0

Score : 278,588

Les, Jan and John wish to express their sincere thanks to Rebecca VA7BEC, who so capably organized the contest and put together all the helpful information for participants.

Here is a screen shot of the Contest Online Scoreboard at the end of the contest.

~ John VA7XB

Radio-Active

Profiles Of SARC Members

John Brodie VA7XB

Ion Marinescu VE7NL congratulates his son, Jean-Luc on passing the Basic exam, and obtaining his callsign VA7JLU

Ion Marinescu VE7NL (and VA7ION) came to Canada from Bucharest, Romania in 1996. In 1999 he met his future wife who was from Slovakia; they were married at Whistler but, sadly, she passed away in 2009. He has one son, Jean-Luc, who achieved his basic amateur certification in 2018 at the age of 13 and now has the callsign VA7JLU. Both Ion and Jean-Luc are active members of SARC and SEPAR. Ion has a MSc in Metallurgy from the Politehnica University of Bucharest.

Romania, which is surrounded by Bulgaria, Moldova, Hungary and Serbia, has a long and troubled history of occupation, conquest and revolution, partly a result of its strategic location between the nations of eastern Europe and western Asia as well as its access to the Black Sea. So, first some history.

Romania's largest city, Bucharest, was wrested from Ottoman control in 1821 and later occupied at several intervals by the Habsburg Monarchy and Imperial Russia. Later , the Austrians took possession, remaining until 1857. In 1862, after Wallachia and Moldavia were united, Bucharest became the new nation's capital city and, in 1881, was the political centre of the newly proclaimed Kingdom of Romania under King Carol I. During the second half of the 19th century, the elegant architecture and cosmopolitan high culture of this period won Bucharest the moniker of "Little Paris".

Between 1916 and 1918, the city was occupied by German forces as a result of the Battle of Bucharest. After World War I, Bucharest became the capital of Greater Romania. Some of the city's main landmarks were built during this period, including Arcul de Triumf and Palatul Telefoanelor.

In 1941, Bucharest was the scene of the Legionnaires' rebellion and Bucharest pogrom. As the capital of an Axis country, the city suffered heavy damage during World War II due to Allied bombing. Then in August 1944, a royal coup brought Romania into the Allied camp. As a result, the city was again bombed, this time by the Luftwaffe, as well as by German troops attempting to regain the city.

After the establishment of communism in Romania, the city continued to grow. New districts were constructed, most of them dominated by tower blocks. During Nicolae Ceaușescu's leadership (1965–89), much of the historic part of the city was demolished. The Romanian Revolution of 1989 began with massive anti-Ceaușescu protests in Timișoara in December 1989 and continued in Bucharest, leading to the overthrow of the Communist regime. Since 2000, the city has been continuously modernized. Residential and commercial developments are underway, particularly in the northern districts, while Bucharest's old historic centre is being restored.

Before coming to Canada in 1996, Ion worked as an engineer. In Canada he has been employed in manufacturing and quality assurance management. He now has his own business specializing in contract repair of heavy equipment, which he describes as hard work but very rewarding. He also occasionally teaches gold prospecting courses and the CORE (Conservation Outdoor Recreation Education) program.

Ion has been involved in electronics since grade 5 when his science teacher gave him a handful of germanium transistors and diodes with which to experiment. By grade 8 he was building short wave receivers from Russian kits for his parents' coworkers. He earned his receiving license – yes, you need a license to be allowed to receive in Romania – during high school. In 2002 he achieved his Basic and Advanced Canadian certification and is currently learning Morse Code with the objective of achieving 12 wpm.

As Ion lives in a townhouse, his HF activity is mostly mobile/portable using an ICOM IC-718 with a Buddipole antenna on an 18' mast or a G5RV. Occasionally from home he will use a BitX20 transceiver and an end-fed wire during good propagation which allows contacts as far as California. He enjoys SSB and digital except FT8 and other "automatic" modes, which do not appeal to him. On VHF he uses a Yaesu FT-817ND and a home-made J-pole.

Ion likes to experiment with software defined radios including Airspy mini, E4000 and R820T. He is especially interested in radio astronomy and was involved for a while in sun radio monitoring with a Sudden Ionospheric Disturbance (SID) Space Weather Monitoring station.

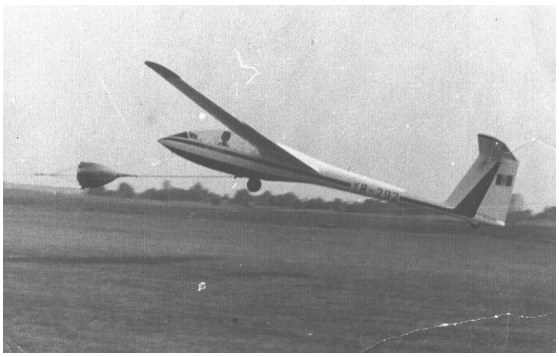
His astronomy interest has led him to use his 12" telescope to view deep sky objects and variable stars. In 2020 he hopes to observe the quasar 3C273, the farther object from Earth (2.4 billion light years away) which is visible through a small telescope.

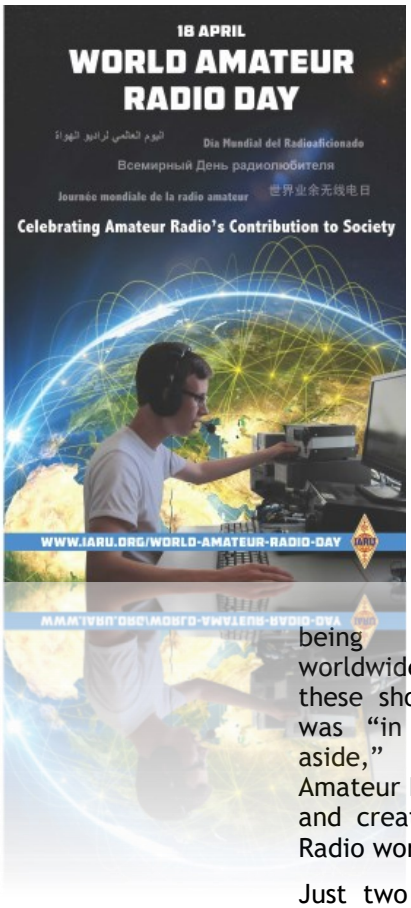
Currently he is in the process of building a Jovian receiver to listen to Jupiter's storms in the upper HF band. He has built a number of kits such as the Elecraft K1, BitX18, PSK20, PSK30, warbler (psk on 80m), BitX40 to name just a few.

A man of many and varied interests, Ion also enjoys RV camping, glider flying, sailing, playing the violin and oil painting. He likes programming Arduino and Raspberry Pi, which he describes as the best two inventions since discovery of the wheel.

In 2020 he will start building a Jovian receiver and possibly get into satellite communication. For the long range, he hopes to continue to grow his company, eventually hiring his first employee in 2020.

~ John VA7XB





World Amateur Radio Day

John Schouten VE7TI

Every April 18, radio amateurs worldwide take to the airwaves in celebration of World Amateur Radio Day. It was on this day in 1925 that the International Amateur Radio Union was formed in Paris.

Amateur Radio experimenters were the first to discover that the short wave spectrum — far from being a wasteland — could support worldwide propagation. In the rush to use these shorter wavelengths, Amateur Radio was "in grave danger of being pushed aside," the IARU's history has noted. Amateur Radio pioneers met in Paris in 1925 and created the IARU to support Amateur Radio worldwide.

Just two years later, at the International Radiotelegraph Conference, Amateur Radio gained the allocations still recognized today — 160, 80, 40, 20, and 10 meters. Since its founding, the IARU has worked tirelessly to defend and expand the frequency allocations for Amateur Radio. Thanks to the support of enlightened administrations in every part of the globe, radio amateurs are now able to experiment and communicate in frequency bands strategically located throughout the radio spectrum. From the 25 countries that formed the IARU in 1925, the IARU has grown to include 160 member-societies in three regions. IARU Region 1 includes Europe, Africa, the Middle East, and Northern Asia. Region 2 covers the Americas, and Region 3 is comprised of Australia, New Zealand, the Pacific island nations, and most of Asia. The International Telecommunication Union (ITU) has recognized the IARU as representing the interests of Amateur Radio.

Today, Amateur Radio is more popular than ever, with more than 3,000,000 licensed operators!

World Amateur Radio Day is the day when IARU Member-Societies can show our capabilities to the public and enjoy global friendship with other Amateurs worldwide.

We have provided a poster for World Amateur Radio Day. Any club may download it and use it to promote WARD in their area. The poster comes in two sizes: 61cm x 91cm and a small (A4) flyer.

Groups should promote their WARD activity on social media by using the hash tag #WorldAmateurRadioDay on Twitter and Facebook. IARU will list all WARD activities on this page. To have your WARD activity listed, send an email to IARU Secretary David Sumner, K1ZZ.

April 18 is the day for all of Amateur Radio to celebrate and tell the world about the science we can help teach, the community service we can provide and the fun we have.

We hope you will join in the fun and education that is World Amateur Radio Day! The theme for 2020 is "Celebrating Amateur Radio's Contribution to Society."

The Echolink World Conference and IRLP 9251 is going to help celebrate World Amateur Radio Day on Saturday April 18 from 12am to 12 am. The special event callsign will be W7W. Hope you are able to check in. — Tom AF7J

~ John VE7TI

Field Day 2020

Time To Start Planning!

Jason Biggin VA7ITJ

Hello Surrey Amateur Radio Communications (SARC) and Surrey Emergency Program Amateur Radio (SEPAR) members,

I am looking for your input on how we can make this year's field day a success. Last year we came in first in Canada in our class. This year, Field Day is the weekend of June 27-28, when Ham enthusiasts gather for a 24-hour operational period. At this time, our many diverse interests converge at one time and place, along with fellows across North America. Some of the key motivators include contesting, innovating, being social and emergency operations.

I'd appreciate hearing back on your preferences. Based on your feedback, we can determine what we will do this year and how it will look.

Special note to recent SARC graduates: This is an excellent opportunity to get involved and continue your learning. Your feedback and participation are very welcome! More information about field day can be found here.

73,

~ Jason VA7ITJ

What interests you most about Field Day?

- Social?
- Contesting?
- Innovating?
- Emergency Operations?
- Other?

Social

- Are you interested in camping at the event?
- Do you want to participate in a Fox Hunts?
- Are you an Elmer who can provide mentoring?
- Would you like some help from an Elmer?
- Are you interested in planning, preparing, facilitating this event?
- What are your recommendations for food/meals?

Contesting

- Which modes do you want to operate?
- Should we operate at high power and make many contacts or QRP with few high-point contacts?
- What power-multiplier should we use? (generator, non-commercial alternate)
- What bonus points should we achieve? (the following are some of them)
- Youth participation
- 100% emergency power
- Media publicity
- Public location
- Information Table
- Message to Section Manager
- Formal messaging
- Satellite QSO
- W1AW bulletin
- Education activity
- Site visitation by governmental official or agency representative
- GOTA

Innovating

- Are there any experiments or demonstrations you would like to perform?
- What are some innovative ideas we should try?

Emergency Operations

- Do you want to pass NTS and digital Field Day messages?
- Do you prefer we set up indoors or outdoors (in tents)
- Are you knowledgeable or interested in learning the Incident Command System (ICS)?
- Are you interested in being a Section Chief or Officer?
- Are you qualified and available to be a First-Aid resource?

Some Recent Events...

After a recent Saturday Kalmar breakfast a few of us went over to Fire Hall 11 and cleaned up the trailer storage. We organized and cleaned up the extra antennas that are stored there, re-installed the generator on our newly painted antenna trailer, and moved the trailers around. They are now well positioned and fully accessible. We also dug a trench between the building and the shelter and buried a conduit with an extension cord to connect to the bigfoot battery charger.

~ Steve VE7SXM

Old Yeller might now be called “Old Grey” or “Old Formerly Yeller”. Brad of Tri-City Sandblasting did a great job of sand blasting, application of one coat of epoxy primer and a top coat of urethane in his PoCo shop. Reinforcement was also welded on two legs of the tower to strengthen them at the point they rest on the vertical supports. A work party on Feb. 15th reinstalled the generator and put all the aluminum antenna pieces back in the tubes. Ready for Field Day.

SURREY AMATEUR RADIO FoxHunt

HIDDEN TRANSMITTER EXERCISE & HUNT

FREE EVENT · OPEN TO THE PUBLIC

SATURDAY MAY 9, 2020 at 9am

Crescent Park, South Surrey

Pre-hunt Coaching, Registration & Instruction 9am
FoxHunt 10am—Noon

Location See QR Code Below

If you are a beginner and do not have a radio, come anyhow, we have loaner equipment, or we can team you up with someone experienced.

Talk-in 147.36+ (110.9 Tone)

All are welcome but if you stay for the BBQ ($10) we ask that you RSVP to jamesadf77@gmail.com

SARC
Surrey Amateur Radio Club

SEPAR Report

Gord Kirk VA7GK

Surrey Emergency Program Amateur Radio

SEPAR is a group of amateur radio operators who volunteer for the City of Surrey. We are tasked with being ready to provide communications for the city should normal methods of communication fail. We are made up of volunteers from all areas of the city and surrounding area. Most members of SEPAR also belong to Surrey Amateur Radio Communications (SARC).

SEPAR holds monthly meetings on the 4th Thursday of the month at 7:00 pm. Currently we are meeting in the Surrey Fire Training Centre located behind hall #9 on 64th Ave. (14923 64th Ave, Surrey). These meetings are open to all interested amateur radio operators and those considering getting licensed. The new SEPAR website will provide up-to-date information on meeting locations, time and the topics. The website is www.separ.ca.

Recently we have been doing a back to basics series to help get everyone to a common understanding of how their radio works, how SEPAR works and will be moving towards basic training and awareness of Emergency Management and Emergency Preparedness.

In February our meeting will be a basic review of the WINLINK system, how it works and how you can use it with your radio. We will be making sure everyone has a Winlink email address which they can use on any computer but can also send basic email to another amateur radio operator via your own radio. Think of this as the ability to send an email without the internet in your area. If you want to send an email to me via Winlink you can use: VA7GK@Winlink.org as well Don VA7GL has been organizing a weekly checkin via Winlink. If you are interested in joining the weekly Winlink net send Don an email at va7gl@winlink.org.

We do have several annual events which we participate in. The largest exercise of the year is Field Day. This event happens in late June over a weekend and is a great time of fun and practice. We join with SARC and set up a remote station in a park and operate for 24 hours simulating how we might have to operate during a disaster. More information will be coming on this but I encourage everyone to plan on attending and signing up for a show time to actually operate the radios. There will be lots of time leading up to this event if you would like to get some practice and coaching with an “Elmer”. An Elmer is someone who can help answer your questions and get anyone over the fear of sitting behind the microphone.

We also have various times we meet just for fun and conversation. Each Saturday we are welcomed and many of us attend with other members of SARC at the Kalmar Restaurant for breakfast. Other times we send out an invite to meet to maintain and test the various equipment we use. The program has been built by volunteers and is maintained by them as well. Skills beyond radio training are greatly appreciated. Some members help in a support function and offer to help with meals at an event, and others use mechanical abilities to maintain trailers, generators etc. If you want to learn about an aspect such as charging and maintain batteries, building your own battery back up etc. we have individuals who can help guide you on purchases, and setting things up. Other skills supporting SEPAR also include website maintenance, teaching, accounting etc.

Several members have recently expressed an interest in Mesh networks and digital radio. These are areas that we will explore and look at how they can fit in and support the emergency program.

While some people may not be able to actively volunteer during an activation they may have an interest from a hobby point of view that is a very direct way of supporting the emergency program even if it is done inadvertently. An example of this are many of the SARC members that support their repeaters, antenna towers etc. All of this we have been able to use for practice and is available for SEPAR to use for an emergency.

I have had many individuals indicate they support SEPAR but cannot be active at this time or feel they are too old for regular participation. As the coordinator I certainly understand this and always encourage any amateur can help during an emergency from their own home or vehicle. We have the ability to report what we can see from our front porch, or in our neighbourhood during an emergency. Simply being present in your neighbourhood and able to pass a message from a neighbour (or to a neighbour) might be one of the most important things you can do.

The Neighbourhood Emergency Preparedness Program (NEPP) which is also part of the overall Surrey Emergency Programs encourages neighbours to work with neighbours to help each other during an emergency. Basic personal preparedness can go along way to help each of us be more comfortable and safe during an emergency. Each prepared individual or family is one less the local government needs to try and help. During emergencies help is always stretched very thin and can be easily overwhelmed. By working with friends, family and neighbours you can help your neighbours manage better in the event of an emergency. Think of preparedness like buying and insurance policy. You hope you never need to use it but a glad you have it when needed.

One area of preparedness is a personal communications plan. Have you thought about who you might need to get in touch with in an emergency? If you are having trouble getting home from work after an earthquake how would you communicate with your family. If you family does not have another amateur radio operator at the house how would you let them know where you are? One solution might be to radio another amateur radio operator who lives near your home and ask them to let your family know your safe and on the way etc.

The SEPAR activation plan includes going to the SARC Repeater (147.360 +110.9 or to Simplex 146.550 if the repeater is not working) during any emergency and establishing communications throughout the city. Our hope is we have operators able to relay messages and information to all of the areas of the city, including providing accurate information into the city EOC to help them manage throughout the emergency.

I hope this article helps with understanding of what SEPAR does and encourages each reader to put some thought to their own emergency preparedness and how you might help your family and community be better prepared.

If you have any questions please feel free to ask. You can email me at VA7GK@shaw.ca or send a question or comment through the link on our website: www.separ.ca

~ Gord VA7GK
SEPAR Coordinator

Ralph VA7UB and Nell VA7PE assembling their Code Practice Oscillator kit as part of the current SARC-SEPAR CW course.

Neighbourhood Emergency Preparedness

Surrey's Panorama Ridge: A NEPP Showcase

John Brodie VA7XB

We have moved into high gear with NEPP (Neighbourhood Emergency Preparedness Plan) for our local neighbourhood. Planning is so much easier when the number of homes is only 40, as opposed to the 1000+ single family homes on the Ridge. These residents recognize that in the event of a disaster, it will be their immediate neighbours they may have to rely on for some time, before municipal or other government response agencies are available to assist. Many of the neighbours already know each other or, if not, welcomed the opportunity. For the purposes of this meeting, both the Block Watch and NEPP participants, who share a similar purpose, were invited.

So we had our first large meeting at the home of one of the organizers, with 20 attendees. A potluck dinner got things off to a sociable start at 6 pm, then moved into a business meeting at 7 pm. Attendees were asked to complete a confidential contact information form to facilitate sharing of information within the group for emergency planning purposes. Residents were also provided with a questionnaire which allowed them to describe any special needs (communication, medical, independence, supervision and transportation etc.) and also to include any personal skills and equipment resources they might have available during an emergency. This information, too, is to be retained by the neighbourhood coordinator in both written and digital form and shared only on a need-to-know basis.

A master plan template, designed by the Coordinator for the entire West Panorama Ridge, was described briefly after which volunteers were sought for the following positions: Leadership, Shelter & Caregiving, Communications & Transportation, First Aid, Search & Rescue, Utilities & Fire Suppression, Damage Assessment. Persons who volunteered for these positions were given an outline of a plan for completion over the coming months.

In addition to filling of the volunteer positions, a resident volunteered to have his home designated at the assembly point, with an open park area to be backup. As the only amateur radio operator present, I naturally took on the Communication and Transportation unit. Now I have to make sure that my equipment is ready to go, and I am proficient in the responsibilities that may be required of me.

The meeting was a great success as we met more of our neighbours and succeeded in filling all the volunteer positions. Attendees left in a spirit of enthusiasm ready to undertake their specific tasks for our next meeting in April at which time the task leaders will be prepared to describe their detailed plans for the benefit of the others. In the meantime, we will be testing the effectiveness of walkie-talkies within our neighbourhood, but continuing to recruit more students for the basic amateur radio certification.

~ John Brodie VA7XB

Challenging Your Brain During Exercise May Help To Prevent Dementia

From Dr. Gabe Mirkin's Fitness and Health e-Zine https://www.drmirkin.com/

This month's Scientific American has a fascinating article that explains why you should exercise your brain while you exercise your body (January 2020;322(1):26-31). Almost 50 percent of North Americans over 85 and 13 percent of those over 65 suffer from loss of brain function called dementia (Alzheimer's Assoc Facts and Figures, 2018). We know that you lose brain cells as you age, and scientists used to think that you could not make new brain cells. However, aging causes memory loss by reducing blood flow and nourishment to brain cells (Neurology, December 05, 2017; 89 (23). You may be able to improve some aspects of brain function with aging by exercising (Nat Rev Neurosci, 2008 Jan;9(1):58-65) and there is evidence that you may be able to make new brain cells as you age by exercising your skeletal muscles and brain at the same time (Cell Stem Cell, April 5, 2018;22 (4):589-599).

Several studies show that exercise increases blood flow to the brain to improve mental function in older people with mild cognitive impairment (MCI) that often precedes dementia (Journal of Alzheimer's Disease, Feb 1, 2019;67 (2):671-684). Furthermore, exercise can improve thinking skills in people of all ages (Neurology, January 30, 2019). A regular exercise program and higher level of fitness help to preserve the size of an animal's brain (Brain Imaging and Behavior, published online June 17, 2019) by causing the body to produce increased amounts of a hormone called BDNF (Eur J Neurosci, Nov 2004;20(10):2580-90). The same improvements in brain function with aging were reported with exercise

Both Physical Exercise and Problem-Solving Help Your Brain

Animals who had to use their brains thinking about earning rewards during exercise preserved their brain cells more than if they just exercised without distraction (Front Neurosci, Nov 10, 2009;3:50). In human studies, people who suffered from Mild Cognitive Impairment (MCI), which usually precedes dementia, had improvement in memory and complicated tasks requiring memory when they exercised while playing a mentally demanding video game (J Clin Med, Sept 2018;7(9):249). The authors of this study have shown that exercising while playing video games increases blood levels of the hormone BDNF, which helps to grow new brain cells, more than just exercising without mental tasks (Am j Prev Med, Feb 2012;42(2):109-19).

If you have worked in a scientific or technical field you have probably learned mnemonics that only your peers would understand. As you age, you can use this store of knowledge to challenge your brain and to invent new mnemonic devices for yourself. Try to do these during physical exercise:

- Plan what you are going to do the rest of the day and then compose a mnemonic that puts your tasks in proper order
- Make a grocery list, and create a mnemonic for that list
- Do math problems in your head
- Try to memorize a few words in a foreign language just before you exercise, make up a mnemonic for these 5 to 10 words, and repeat the mnemonic and its meaning many times while you exercise
- Learn the words of a new song just before you exercise and repeat that song as you exercise
- Learn to do a new kind of exercise that requires you to concentrate on developing skills and coordination in new ways -- such as line dancing or water aerobics.

My Recommendations

Loss of brain function is a frightening result of aging. Your brain is like your skeletal muscles: you have to use them both to keep them. Exercising your muscles causes cells to produce BDNF, a hormone that can cause new brain cells to grow, so you may be able to help retain your memory even better by exercising your brain and skeletal muscles at the same time.

Try to work up to being able to exercise for 30 minutes every day while using your brain -- either to pay attention during a challenging exercise activity (such as riding a bicycle outdoors), or by playing mind games, solving problems and practicing new mnemonics related to your current activities and interests.

~Why Your Brain Needs Exercise, *Scientific American, January 2020*

At The SARC Meeting…

January 8, 2020

January General Meeting

SARC General Meeting Minutes
January 8, 2020

Attendees: 39

Meeting Start: 7:09pm

Location: Surrey Fire Training Centre

Welcome

Stan welcomed everyone to the first meeting of 2020 and called for a check of health and welfare. Nothing heard.

OTC

Stan: The OTC has been temporarily relocated and is in a non operating mode at this time. We're in storage right now and the Surrey Fire Services have been in discussion with the City of Surrey about our needs for a new OTC.

Outgoing SARC director

Steve: Michael Birtles VE7GMP has moved back to Alberta and submitted his resignation to the directors. John Schouten VE7TI has agreed to fill the position until the next AGM and this has been accepted by the directors.

30ft Tower Available

We have been offered a Delhi 30' tower, rotator and 3 element beam. We would need to take it down though, and it is located in Abbotsford. Please contact John Schouten if you're interested.

Net Control Openings

We have open positions for 2 net control operators and 1 net control manager. The responsibilities for net control operator are to follow the net control script located on the SARC website, take check-ins and manage the net. There is a rotating schedule for each week of the month for net controllers. The net control manager responsibilities are to ensure that net control operators are scheduled each week and identify a backup should a net controller be unavailable.

Financial

Scott: No financial report this month but there have not been significant changes. We did put down a deposit for next year's Christmas party. Name tags are available for those that ordered them. If you were expecting one please see Scott at the break.

SEPAR Donation from SARC

Gord: At the Christmas Party a donation was made from SARC to SEPAR. Thank you, the funds will be put to good use.

Gaming Grant

Steve: We submitted our gaming grant last summer and a portion of our request. Funds have been allocated for the repairs to the Yellow Tower. There are about 18 people on the Gaming Grant Committee and they will recommend allocation of funds for identified projects. We will plan for a meeting later this month.

John B. We also have a $700 credit at RadioWorld we should utilize.

Stan thanked John VA7XB for the several weeks of work involved in preparing the application and the successful result again this year.

New Business

Donation for Eureka Amateur Radio Club

Kevin McQuiggin: In the last SARC Communicator an article was written about the interview of VY0ERC the Eureka Amateur Radio Club on Ellesmere Island, Nunavut. Can we consider donating $50-$100 for their quest for better antennas. Stan: We will raise it within the directors at the next meeting.

John Schouten provided an overview of the upcoming presentation.

Coffee Break

Start 7:33pm

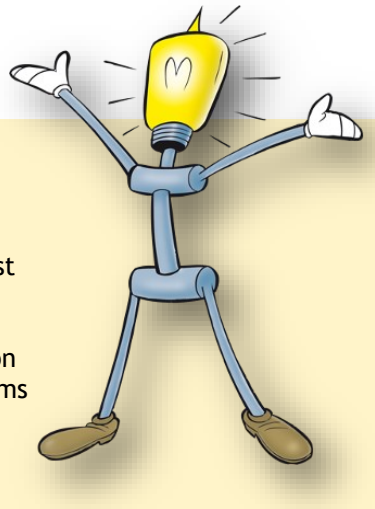
End 7:54pm

Presentation: Getting Started in Amateur Radio and Improving your Station

https://drive.google.com/file/d/1TkZWzDsznMV1hbcq69Jwtn9AxSp3MCXW/view

Meeting Adjourned at: 9:35pm

~ Jeremy Morse VE7TMY



Improve Your Signal—Meeting Presentation

Our first SARC General Meeting of 2020 was Wednesday, January 8th and it was one of our best attended presentations ever.

As a result of feedback from our Basic courses, we planned a presentation and panel discussion around the basics of getting started in Amateur Radio. This was intended not only for new Hams but also those looking to improve their station capabilities.

We covered primarily VHF/UHF gear, antennas, power and accessories. Based on the interest in this session we will host a similar topic focusing of HF later in our meeting schedule, likely in March.

We asked our SARC members to bring along any good used gear for sale and a few items showed up.

By request, here is the slide deck from the presentation:

https://drive.google.com/file/d/1TkZWzDsznMV1hbcq69Jwtn9AxSp3MCXW/view?usp=sharing

We hope to have an accompanying guide available here shortly.

~ John Schouten VE7TI

At The SARC Meeting…

February 12, 2020

February General Meeting

Attendees: 32

Meeting Start: 7:00pm

Location: Surrey Fire Training Centre

As a result of prior commitments, our guest presenter started at the first half of the meeting.

Presentation:

Amateur Radio - Importance of Cyber Security

Kevin McQuiggin VE7ZD introduced Mr. Hardeep Mehrotara VA7HKM, the presenter for the evening.

See the next pages for a summary of the presentation and a link to the slides.

Coffee Break

Start 7:55pm

End 8:10pm

Welcome

Stan asks for a report of health and welfare.— Nothing heard.

Financial

Scott Hawrelak: Provided a report of the financials.

Our smaller mobile tower, 'Old Yeller' was repainted and is now 'NEW Grey'. We also contracted for some minor repairs, sandblasting and the paint job.

Name tags are available for those that ordered them last year. Another order will be going in soon so contact Scott if you'd like a SARC name badge.

OTC

Gord provided an update on the negotiations and search for a new OTC location. This is still in progress so nothing is finalized at this time.

Gord VA7GK: Had a meeting with the Deputy Fire Chief and Assistant Fire Chief and both are helping to look for a new location for us. City of Surrey properties management are also looking.

Stan: We are also considering a 50ft tower if possible when a location is chosen for the OTC.

Ham Course

John Schouten VE7TI: The next basic ham course is Feb 25th for 9 weeks and filling up fast. We have 20 students signed up so far but room for a few more. We also have a discount available for family of SARC members.

Repeater

Stan: We don't have a repeater committee at this time but are planning to look into purchasing a new repeater.

We are also looking at re-establishing the old south repeater site. Dave Cameron essentially built the repeater at the Concord site and is offering to help look into the crosstalk issue.

Burnaby Amateur Radio Club Swap Meet

Steve McLean, (Absent) is asking the membership for assistance to sort and take excess donated equipment to the swap meet. We would plan to sort equipment in the storage Feb 22 or 23 the weekend before the swap meet on Saturday, February 29th.

We need to confirm a few volunteers to assist before booking the tables. Please contact Stan and Steve if you are able to help out

Volunteers from the meeting: Kevin McQuiggin, Frank Kowalishyn, Stevo Grkinic, Thomas Peacock, Stan Williams. Thank you.

Membership

John B. We're currently around 130 members and holding.

4x4 Course

Stan asked if SARC should volunteer to present a 4x4 (communications) course. There seems to be interest amongst those in the members attending.

Donation for Eureka Amateur Radio Club

Kevin McQuiggin asked in January for consideration of a donation to VY0ERC the Eureka Amateur Radio Club on Ellesmere Island, Nunavut. Stan announced that the SARC Directors approved a $50 donation be made to their antenna fund.

The Direction of SARC

Stan canvassed those present for opinions on the future direction for SARC, and various people provided input. To summarize, most believed SARC should not be limited to any specific areas within the amateur radio hobby. Some concerns were expressed about funding of too many projects. Goals could be identified and strategies to accomplish them set forward.

Field Day

Jason is beginning to collect information about what everyone wants to get out of Field Day this year. An email will be sent out shortly. The weekend of June 26/27/28 is Field Day 2020.

SEPAR

Gord: There is a planned Winlink talk at the Fire Training Centre on Thursday, February 27th at 7pm. All are welcome to attend.

New Business

Elmers Group

John Brodie VA7XB: The Elmers group is a pool of people that have a great deal of experience and are willing to help new hams. The list is being formalized and will eventually be posted on the SARC website.

Meeting Adjourned at: 9:30pm

~ Jeremy Morse VE7TMY

We've added to our trophy case!
The SARC contest crew did very well in the RAC Canada Day contest last year.

Congratulations to the participants!

SARC Meeting Notes

Internet Security For Hams

Cybersecurity consists of three key pillars

Yes, we're susceptible to malware with all these new connected gadgets!

At our February 2020 general meeting we had a guest speaker who is an internationally regarded expert on Internet security. For the past 20+ years, Hardeep Mehrotara has worked for the military, law enforcement and news organizations. He has co-authored several books on critical controls and security benchmarks, and has participated in hacking operations to test system security. Best of all, he is also a Ham operator as VA7HKM.

The discussion points from the presentation covered

- What is cyber security?
- Importance of cyber security in amateur radio
- evolving cyber security threats
- practice basic cyber hygiene

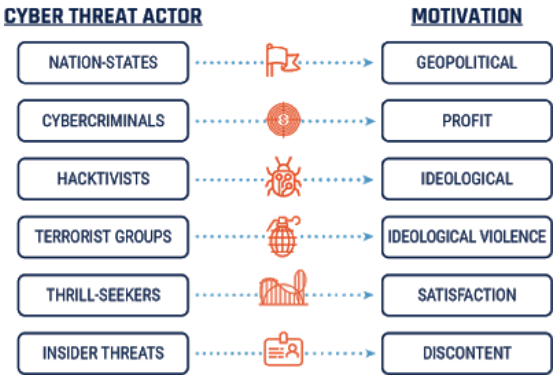
He covered the importance of Ham radio and internet, our modern digital technology, which more and more is connected to the Internet. Many transceivers and their accessories have some type of Internet connection, particularly remotely controlled radios.

Cyber security refers to combination of people, process and technology designed to protect inter-connected networks (e.g. Internet), devices, programs, and data from attack, damage, or inappropriate or unauthorized access.

Importance of cyber security in amateur radio

- Denial of service on ham radio networks.
- Hacking of Software defined radios.
- Malicious control of remote devices.
- Impact on Internet-Of-Things (IoT) devices.

Threat actors



Evolving cyber threats include

- Phishing
- Third party email compromises
- Ransomware
- IoT based attacks

Phishing and Third party compromised email. ARRL warned about this to their members with an *xxx.arrl.net* forwarding address.

Ransomware

Also a real threat and you should keep a separate backup as a precaution.

Practicing basic cyber hygiene

- AVOID OLDER OPERATING SYSTEMS! For example, Windows 7 is no longer supported.
- ALL operating systems are at risk, including Mac and Linux
- Install a reputable anti-virus and firewall
- Patch your systems regularly
- Use strong passwords and do not re-use passwords
- Use multi-factor authentication where possible
- Encrypt your sensitive information
- Backup your information
- Be cautious when you click on links on websites, emails, social media

Cyber Threat Predictions

As technology progresses, so will the threat.

See Hardeep on a news presentation on cyber security threats

https://globalnews.ca/video/5974584/protecting-small-businesses-from-cyber-security-threats/

The slides of Hardeep's presentation are at:

https://ve7sar.blogspot.com/2020/02/internet-security-for-amateurs.html

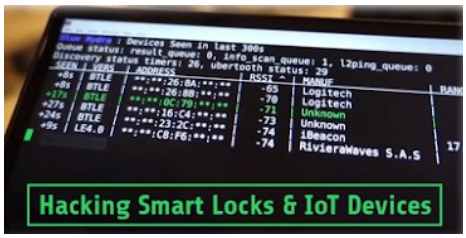
ARRL Warns Members to be Aware of E-mail Scams

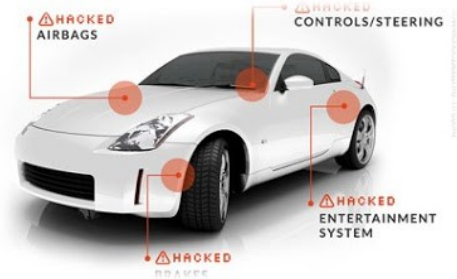
TAGS: arrl, arrl hq, arrl members, arrl.net e-mail accounts, asks, best thing, bogus e-mails, computer, e-mail, e-mail program, Manager Michael Keane, passwords, personal information, spam list, unique, use names

12/13/2011

Many ARRL members with **arrl.net** e-mail accounts have recently received bogus e-mails in a "**phishing**" attack. These are scams designed to scare people into e-mailing back personal information -- such as user names and passwords -- to the scammer at an unknown address. This particular attack was more sophisticated than usual, but far from unique.

"There is never a time when we would ask via e-mail for user names and passwords of **arrl.net** users," explained ARRL IT Manager Michael Keane, K1MK. "There is simply no need to ever do so. If you receive an e-mail asking for personal information and it looks like it originated from ARRL, please do not respond. The best thing you can do when receiving bogus e-mails is to simply add it to the spam list in your computer's e-mail program and delete it. Please don't forward it to ARRL HQ -- we will have already seen it and are already responding to it."





Amateur Radio Mesh Data Network Featured In A Podcast

Andrew M0ONH discusses the new Amateur Radio Mesh Data Network planned for Essex and Southeast UK on the ICQ Podcast show episode 318

Andrew has set up an Amateur Radio Emergency Data Network (AREDN) network in Essex. AREDN provides a way for Amateur Radio operators to create high-speed ad hoc Data Networks for use in Emergency and service-oriented communications.

He hopes that other Amateur Radio operators will be interested in helping build up a Mesh of nodes which we can develop into a real community.

There are some fun aspects as well as some benefits to RAYNET operations. The plan will be to provide a wide area network enabling resilient communications across the county without the need to rely on the internet. Fast-forward to 01:37:00 into the show which can be downloaded from https://www.icqpodcast.com/download-the-show/2020/2/16/icq-podcast-episode-318-south-essex-rally-review

UKMesh https://ukmesh.org/

~ Southgate Amateur Radio

Ham Gear For Sale

MFJ 269 antenna analyzer + dip meter with attachments **$150**

Contact: John VA7XB (604) 591-1825 va7xb@rac.ca

RigExpert "AA-55 Zoom" antenna analyzer. Less than a year old. Purchased new at HRO in Portland, OR in January 2019. The unit has the original box, manual, all accessories and is in perfect shape. On sale price at HRO is US$328.95. That is $328.95 x 1.32 or C$434.21. **For sale at C$375.00**

70 cm Fast Scan TV Transmitter
For sale is an analog fast scan (NTSC standard) ATV transmitter in a hardened and waterproof metal case. Suitable for mounting outdoors. Last used by hams at Simon Fraser University on an emergency communications project in the early 1990s. Runs on 12 VDC. Approximately 100 feet of power/antenna/control cables included. As is, but if it doesn't work to your satisfaction you can return it. **$100 OBO.**

Contact: Kevin McQuiggin VE7ZD/KN7Q mcquiggi@sfu.ca

Attention Basic Course Grads! Estate sale transceivers: OPEN TO OFFERS

- **Yaesu 2M FT-3000, FT-2500M, FLDX-2000B 1KW**
- **Kenwood TR-7930, TM-731A, TM-231A, TS-830S, TS-940S**
- **Radio Shack Police, Fire Scanner**

Contact: Heinz Buhrig VA7AQ workwpx@gmail.com

Kjeld has a rather large Marine Radio (HF?) sitting at his home and he'd like to find a new home for it. If you're interested contact Kjeld.

Contact: Kjeld VE7GP@telus.net

Icom IC211, Microphone c/w 13.8vdc Power Supply
Microwave Modules 432 Mhz Converter
Microwave Modules 144 Mhz Multimode Transverter
DRF CW Audio Filter
Realistic Electronic Reverb
Make offer on any of the above. Vendor is very motivated!

Contact: Lionel H. Edwards ve7bqh@shaw.ca

The Chicken And The Egg, Which Comes First, The Antenna Or The Radio?

Onno VK6FLAB

Onno is a ham in Australia. He has shared his Foundations of Amateur Radio podcast contents with us for some time. I had been meaning to write a QRT about this very subject as it frequently arises during our Basic course. Onno's piece nails the subject. -Ed.

In my day to day activities as a radio amateur I come in contact with people across all parts of their amateur journey. Some who don't yet know that they're amateurs, through to those who've just passed their test and are waiting for their callsign. Then there are those who have been amateurs for a while, experimented a bit and have settled down into the comfort of being a member of an active community. Stretch that further and I also spend regular quality time with amateurs who have been licensed longer than I've been alive.

Recently I received an email from a freshly minted amateur. Just like me, still pretty much wet behind the ears, keen as mustard, trying very hard to figure out what to do next and where to go.

The basic gist of the email from this amateur was that they didn't know what kind of antenna they could erect at their home and failing that, couldn't decide on what radio to acquire to match the antenna that they hadn't decided on, not to mention that the antenna needed to match the radio that didn't yet exist.

If you've been around this community for a while you might recognise the chicken and the egg, which comes first, the antenna or the radio?

The answer is obvious, hidden in plain sight, easy to deduce, simple to understand, and completely useless.

Let me help you with the answer: It depends.

If that didn't test your patience, even if you've been an amateur for longer than my parents have been alive, you'll know that this is an unanswerable question.

So how do you break the egg and get started?

Easy.

Start somewhere.

As it happens I have a recommendation. It's cheap, simple and it will get your feet wet sooner rather than later. My recommendation is neither, or both, depending on your perspective. I promise, I'll get to the point shortly. The reason I'm making it last and savouring the point, some might say, belabouring it, is because it's one that happens over and over again, day in, day out, year in, year out.

> *My recommendation is that you spend $25 on an RTL-SDR dongle...*

My recommendation is that you spend $25 on an RTL-SDR dongle and hunt around your home for a piece of wire. That's it.

If you're not familiar with an RTL-SDR dongle, it's essentially a USB thumb-drive sized device that plugs into the nearest computer and paired with the correct software it has access to many if not all of the frequencies that you as an amateur are allowed to play with.

Given that it's a receiver, the antenna doesn't really matter all that much, at least not initially, so any piece of conductive wire will suit. Most dongles even come with an antenna of sorts, so you can get started straight away.

Resources associated with this podcast are on the vk6flab.com website where I've also collected a few

SARC SOCIETY DIRECTORS 2019-2020

PRESIDENT
Stan Williams VA7NF
president at ve7sar.net

VICE PRESIDENT
Anton James VE7SSD
vicepresident at ve7sar.net

SECRETARY / WEBMASTER
Jeremy Morse VE7TMY
secretary at ve7sar.net

TREASURER
Scott Hawrelak VE7HA
treasurer at ve7sar.net

DIRECTORS
Jason Biggin VA7ITJ
(SEPAR Liaison)

Don Hamilton VA7GL
(Public Service Group Chair)

Steve McLean VE7SXM

John Schouten VE7TI
(SARC Publications/Blog)
communicator at ve7sar.net

SARC MEMBERSHIP, NET & CONTEST MANAGER
John Brodie VA7XB
membership at ve7sar.net

SARC QSL MANAGER
Heinz Buhrig VA7AQ
15684 102 Avenue
Surrey, BC V4N 2G4

SARC REPEATER MANAGER
repeater at ve7sar.net

links under F-troop to get you on your way with an RTL-SDR dongle.

The purist radio amateurs will likely arc up at this point and mention that this isn't real amateur radio, to which I can only say: Bah Humbug. Radio is about receiving as much as it is about transmitting. Any fool with two bits of wire can transmit, but it takes finesse to receive, so start there.

There are other benefits from going this way. Other than ease of entry, that's another way of saying - cheap - you can easily spot where and when there is activity. You can use all the traditional modes like CW, SSB, AM and FM, but you can also play with all of the new modes like WSPR, FT8, JT65 and investigate some of the other modes like RTTY, PSK31, Olivia, SSTV and others.

All this will help you have a better idea of the landscape you're stepping into without a major purchase.

To really set a cat among the pigeons, I'm also looking into a Raspberry Pi based transmitter, rpitx by Evariste F5OEO. When that bears fruit I'll let you know. In the mean time, play, learn, listen, experiment. No need to spend hundreds or thousands of dollars while you're still unsure.

Even if you already have a lovely amateur station, an RTL-SDR dongle is worth every cent and then some.

~ I'm Onno VK6FLAB

Information On AREDN

The Amateur Radio Mesh Data Network (AREDN) seeks to provide the Amateur Radio Community with a quality solution for supporting the needs of high speed data in the Amateur Radio and Emergency Communications field. With this in mind, we would like to support our Amateur Radio emergency program, SEPAR with an easily implemented mesh network.

AREDN provides a way for Amateur Radio operators to create high-speed ad hoc point-to-point Data Networks for use in Emergency and service-oriented communications.

We currently do not have a resource within our group who is confident to proceed forward, but we would like to learn more before we 'dive in'.

Andrew M0ONH has set up an Amateur Radio Emergency Data Network (AREDN) network in Essex, UK.

He describes his work on a recent ICQ podcast. Fast-forward to 01:37:00 into the show which can be downloaded from https://www.icqpodcast.com/download-the-show/2020/2/16/icq-podcast-episode-318-south-essex-rally-review

UKMesh https://ukmesh.org/

AREDN Guide https://arednmesh.readthedocs.io/en/stable/arednGettingStarted/aredn_overview.html

~ John VE7TI

March 11th

The focus of the March meeting is Foxhunting (aka RDF or Radio Direction Finding) with presenters Amel Krdzalic VA7ADA, Les Tocko VA7OM, and Dave Miller VE7HR. For the benefit of those who are new to foxhunting, Amel and Les will explain what foxhunting is all about and provide some pointers in technique. Les and Dave will also demonstrate the second generation of 80m receivers designed by Les, and which will soon be available for purchase.

SARC's annual 80 m foxhunt will take place at Crescent Park on Saturday, May 9th (see poster elsewhere in the Communicator).

April 8th

The April meeting is themed " Getting Started on HF", which is a follow-up to the successful January meeting on VHF/UHF. At this meeting you will hear from a few of the senior members who will be providing advice to beginners regarding transceivers, transmission lines & connectors, power supplies, limited-space antennas, where and how to find the contacts etc. Also, in response to popular request, some time will be spent on HF operating, including operating CW for the special benefit of those who are currently taking the CW course. If you have some HF gear to sell, please bring it along.

SARC hosts an Amateur Radio net each Tuesday evening at 8 PM. Please tune in to the VE7RSC repeater at 147.360 MHz (+600 KHz) Tone=110.9, also accessible on IRLP node 1736 and Echolink node 496228.

On UHF we operate a repeater on 443.775MHz (+5Mhz) Tone=110.9 or IRLP Node 1737.

We are looking for a SARC Net Manager. Its not a difficult job and, if you have some time to spare, we'd like to hear from you. Basically it involves scheduling someone to do the Tuesday evening weekly net.

	SARC Net 20:00 Hrs
1st Tuesday Standby	Jean-Luc VA7JLU Vacant
2nd Tuesday Standby	Jinty VA7JMR Sheldon VA7XNL
3rd Tuesday Standby	Rob VE7CZV Vacant
4th Tuesday Standby	Kapila VE7KGK John VA7XB
5th Tuesday Standby	Vacant John VE7TI
Want a turn at Net Control? Contact the SARC Net Manager	

Down The Log…

SARC Monthly Meetings

2nd Wed. (Sept-Jun)
1900 hrs at the Surrey Fire Service Training Centre, 14923 - 64 Avenue, Surrey, BC. Here is a what3words link and map: https://what3words.com/markers.addiction.ozone

Weekly SARC Social

Saturday between 0730 and 0930 hrs at the Kalmar Family Restaurant 8076 King George Blvd. Surrey

SARC Net

Tuesday at 2000 hrs local on 147.360 MHz (+) Tone=110.9

SEPARS Net

Tuesday at 1930 hrs local on 147.360 MHz (+) Tone=110.9

VE7RSC Repeaters

2m: 147.360MHz+ Tone= 110.9Hz IRLP node 1736 Echolink node 496228

1.2m: 223.960 Mhz -1.6 Tone=110.9

70cm: 443.775MHz+ Tone= 110.9Hz IRLP node 1737

We Have A SARC Patch!

These are suitable for sewing on a jacket, cap or your jammies, so you can proudly display your support for SARC.

The price is $4 each or three for $10 and they can be picked up at a meeting or the weekly Koffee Klatch.

Burnaby Radio Communications
We're Moving!
Michael J. Wong VE7HMW
President/Owner
Commercial / Amateur Radio
4257 Hastings Street
Burnaby, B.C.V5C 2J5
Phone 604-298-5444
Fax 604-298-5455
Email: sales@burnabyradio.com
web: www.burnabyradio.com

We thank our sponsors for their support of SARC

Please support them.

COAX PUBLICATIONS INC STUDY GUIDES

BASIC QUALIFICATION:
The Canadian Amateur Radio Basic Qualification Study Guide

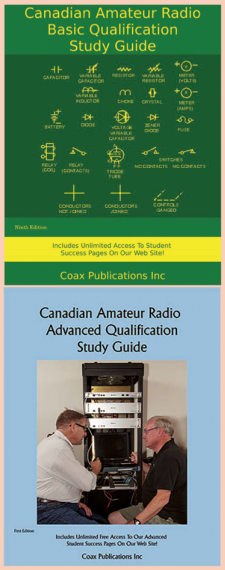
- New 9th edition.
- Updated to the current (2014) Industry Canada exam bank.
- This book is the most widely used study guide in Canadian Amateur Radio classes.

$44.95 + shipping and taxes

ADVANCED QUALIFICATION:
The Canadian Amateur Radio Advanced Qualification Study Guide

- Updated to the current (2014) IC exam bank.
- Covers many topics in modern communications that are not in the IC Question Bank.
- We have included the small amount of additional material required to match the IC 2014 update in the online Student Success Pages.

$44.95 + shipping and taxes



Basic, Advanced or Instructor:
we have them all!
All of our Study Guides feature:

- Unlimited Access to our acclaimed Student Success Pages on our web site.
- Strong Lie Flat Binding – the book will stay where you opened it when on a flat surface.
- Contextual material that goes far beyond the bare requirements of the IC examination.

Clubs: Note special low club prices for orders of 7 or more books!

Order From Our Web Site
http://www.coaxpublications.ca

FLEETWOOD
DIGITAL PRODUCTS
Two Way Radios... For Less
http://www.fleetwooddp.com/digital

radio@fleetwooddp.com

These folks did a great job on the hydraulics for our antenna trailer.

18549-97 Ave., Surrey, BC, V4N 3N9 604-882-9787

http://www.htihydraulics.com/about-us.html

HYDRAULIC TECHNOLOGIES INC.